

Declaration for the Record of Decision

Site Name and Location

Pagel's Pit Site (ID = ILD980606685)
Winnebago County, Illinois

Statement of Basis and Purpose

The United States Environmental Protection Agency (USEPA) has selected a remedial action for operable unit (OU) 2 and has changed the remedial action for OU 1 for the Pagel's Pit site in Winnebago County, Illinois. USEPA chose these remedies in accord with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (hereinafter CERCLA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). USEPA's decision is based on the administrative record for this site.

The Illinois Environmental Protection Agency has verbally concurred with this Record of Decision and has prepared a Letter of Concurrence for the selected remedies. Upon receipt of the Letter of Concurrence, the USEPA will include it in the Administrative Record for this site.

Assessment of the Site

The response action selected in this Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of the Selected Remedy

Two operable units were designated for the site. OU 1 consists of the wastes, soils, and groundwater at the site and any other areas, including groundwater, off the landfill property where contamination from the site is located, except for the groundwater in the southeast corner of the landfill property, south of the waste disposal area, which is OU 2. Use of contaminated groundwater in the vicinity of the waste disposal area as a water supply posed the risk identified at the site that exceeded criteria used by USEPA. A 1991 ROD addressed OU 1. This ROD provides a remedy for OU 2 and some changes in the remedy selected for the groundwater part of OU 1.

The remedy selected for the groundwater in the southeast corner (OU 2) is institutional controls, which consists of deed restrictions prohibiting the installation of water production wells. This groundwater will continue to be monitored as part of the operation of the landfill.

The changed remedy selected for the groundwater part of OU 1 is monitored natural attenuation with a contingency and the imposition of deed restrictions on the property west of Killbuck Creek under which the groundwater is contaminated at levels which make

it unsafe for use as a source of drinking water. The contingency will be used if the control of the contamination coming from the landfill wastes, the control of contamination coming from upgradient of the site, and the natural attenuation processes do not lead to the eventual return of downgradient groundwater to beneficial use, or do not appear to be doing so, or the contaminated groundwater becomes an immediate threat to a downgradient water supply. Capping the landfill and removal of much of the leachate will control the contamination from the landfill wastes. The pump-and-treat system being operated at the Superfund site upgradient of the Pagel's Pit site will control the contamination coming from there. The contingency would be an active remedy that would address the contamination in the groundwater.

Statutory Determinations

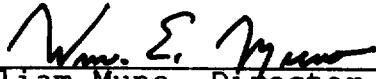
The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, for this site. The large size of the landfill and the apparent lack of on-site hot spots representing major sources of contamination thwart use of the statutory preference for a remedy requiring permanent treatment as a principal element. A principal threat, which the Agency would expect to treat, has not been indicated.

All remaining construction activity is to be completed by the operator of the landfill in accordance with the requirements of Operating Permit No. 1991-138-LF issued on August 17, 1999 by the Division of Land Pollution Control, Illinois Environmental Protection Agency. Long-term groundwater monitoring requirements are specified in the 1993 Consent Decree, and are also required under the existing operating permit. USEPA has determined that its response at the Site is complete. Therefore the Site now qualifies for inclusion on the Construction Completion List.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Date

9/30/99


William Muno, Director
Superfund Division

Record of Decision Summary Pagel's Pit Site

I. Site Description

The Pagel's Pit site (Winnebago Reclamation Landfill or WRL) (ID = ILD980606685) occupies about 100 acres on the west side of Lindenwood Road (see Figure 1), south of Baxter Road and about 5 miles south of Rockford, Illinois. This solid waste landfill has been in operation since about 1972 and has approximately 1 to 2 years of operation time left before it reaches capacity. Municipal refuse and sewage treatment plant sludge have been the primary wastes accepted at the Site. Illinois special wastes (industrial process wastes, pollution control wastes, or hazardous wastes, except as determined pursuant to section 22.9 of the Illinois Environmental Protection Act (415 ILCS 5) and 35 Illinois Administrative Code (IAC) 808) have also been disposed of at the facility.

The Site is located in a predominately rural unincorporated area. It is bounded on the west by Killbuck (or Kilbuck) Creek and on the east by Lindenwood Road. Killbuck Creek, a perennial stream, merges with the Kishwaukee River about 2.5 miles northwest of the Site. The Kishwaukee River merges with the Rock River about 1.5 miles northwest of the confluence of Killbuck Creek and the Kishwaukee River. The Site is located on a topographic high between Killbuck Creek to the west and unnamed intermittent streams to the north and the south. Land use around the Site is a mix of agricultural, rural residential, commercial, and industrial. A new waste disposal unit is being developed to the south of the Site.

The remedial investigation and the feasibility study that were completed prior to the issuance of the 1991 Record of Decision for operable unit (OU) 1 were conducted by a few of the potentially responsible parties (PRPs) for this Site under a 1986 Administrative Order by Consent (AOC). Additional investigations were carried out under this AOC and a 1993 Consent Decree. (OU 1 and OU 2 are described in section IV below.)

II. Site History and Enforcement Activities

The landfill is located at a former sand and gravel quarry. It has been sequentially constructed and filled in several sections. Development has generally occurred in an east to west direction, first in the southern half and then in the northern half. The landfill wastes cover approximately 42.5 acres. The landfill liner was constructed by grading and compacting the base and side walls of the landfill. Asphaltic concrete was installed over the sides and floor and compacted, resulting in a minimum two-inch thick layer. The surface of the asphalt was sealed with a cationic coal tar sealer. This sealed asphalt liner was covered

with eight inches of sand. A network of perforated pipes was installed in the sand on the sloping base. The pipes were connected to manholes where the liquid that drains from the wastes (leachate) collected. However, most of this original leachate collection system no longer functions. Presently, in the western end of the landfill leachate is pumped from the bottom of landfill gas extraction wells to a tank located next to the landfill. From there, it is pumped through a force main to a sewer connected to the wastewater treatment plant in Rockford. Landfill gas is collected and is primarily used to dry sludge from the Rockford wastewater treatment plant before the sludge is placed in the landfill. This system has been developed over the years, since the discovery in about 1980 that landfill gas was leaking from the waste disposal area.

The site was proposed for inclusion on the U.S. Environmental Protection Agency's (USEPA's) National Priorities List (NPL) in October 1984 because the nearby groundwater was found to be contaminated with arsenic, cadmium, and bis(2-ethylhexyl) phthalate. The NPL is the list of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and response. The site was added to the NPL in June 1986.

The USEPA and a few of the PRPs for this site reached agreement embodied in an Administrative Order by Consent, with an effective date of October 16, 1986. This Order requires the Respondents to conduct a remedial investigation (RI) and a feasibility study (FS) at the site. Portions of these studies were carried out by Warzyn Inc., and the reports for the RI and the FS for the work that has been done were submitted in March 1991. Additional studies were carried out later under this Order.

A Consent Decree, entered on February 11, 1993, requires several of the PRPs to perform the remedial design, remedial action, and operation and maintenance for the remedy selected in the 1991 Record of Decision (ROD). Primarily, this requires the Site operator to perform the remedial work.

The Acme Solvent Reclaiming, Inc. site (Acme Solvent site) is located east of the Pagel's Pit site. The Acme Solvent site was proposed for the NPL in December 1982 and was placed on this list in September 1983. Part of the remediation of this site has resulted in the installation of a pump-and-treat system approximately half-way between the two sites. The treated water is discharged into the intermittent stream that lies north of the Pagel's Pit site, but generally the water infiltrates the ground before it reaches Killbuck Creek.

III. Community Participation

Community relations activities for the Pagel's Pit site have been conducted since at least 1987 when several fact sheets were issued and the Community Relations Plan was released. In the early years, community relations for this site were combined with those for the Acme Solvent site.

A Proposed Plan for OU 1 was released to the public on April 16, 1991 which presented a number of alternatives as possible remedies for the problems that had been identified at the Pagel's Pit site. The proposed plan also informed the public of USEPA's and Illinois Environmental Protection Agency's (Illinois EPA's) preferred remedy and that documents concerning the Site, including the Administrative Record, were available for review at the information repository located at the Rockford Public Library and at the offices of USEPA, Region V, in Chicago. A public comment period was held from April 16, 1991 through May 16, 1991, and a public meeting was held on April 25, 1991. A notice of the availability of the Proposed Plan and an announcement of the public comment period and the public meeting was published in the *Rockford Sunday Register Star* on April 14, 1991.

A Proposed Plan for the remedy for OU 2 and for a change in the remedy for OU 1 was released to the public in August 1999. The Proposed Plan also informed the public of the dates for the comment period (August 13, 1999 through September 11, 1999) and the public meeting (August 25, 1999) and informed them that documents concerning the site were available in the repository. A fact sheet that summarized the Proposed Plan was mailed to those on the mailing list. The Proposed Plan was placed in the repository and was mailed to individuals thought to be most affected by the proposed remedy. At the public meeting, representatives of USEPA discussed the proposed alternative for OU 2 and the proposed change in the remedy for OU 1, answered questions about the site and the problems there, and received verbal comments. An official transcript of this meeting was made. A notice of the availability of the Proposed Plan and the announcement of the public comment period and the public meeting was published in the *Rockford Register Star* on August 13, 1999. This approximately one-quarter page notice was in the first section of the paper. At the request of some attendees at the August 25, 1999 public meeting, a second meeting was held September 8, 1999 to further discuss the Proposed Plan. A transcript was not made of this meeting and only written comments were accepted at this meeting.

The Administrative Record index, including the updates, is included as Appendix A.

Responses to the comments received during the 1999 comment period are contained in the Responsiveness Summary which is included as Appendix B of this Record of Decision.

IV. Scope and Role of the Operable Units

Operable Unit 1 consists of the wastes that have been disposed of at the Site and the contaminated groundwater around the waste disposal area and downgradient as far as the plume of contamination extends, but not the contaminated groundwater in the southeast corner of the Site. The groundwater in the southeast corner is being addressed separately and is designated as OU 2. The remedy for OU 1 was described in the 1991 ROD. Briefly, this remedy consisted of:

- a sanitary landfill cover for the waste disposal area;
- a barrier well system for groundwater extraction along the west side of the site;
- on-site groundwater treatment by carbon adsorption or air stripping following pretreatment with a solids filter, with the treated water being discharged to surface water;
- removal of inorganics by treatment, if necessary, prior to carbon adsorption or air stripping;
- leachate extraction and transfer to the local publicly owned treatment works for treatment;
- gas extraction and the use of the gas for fuel or the flaring of the gas;
- deed restrictions; and
- site monitoring and maintenance of all remedial action components.

These elements address the remedial action objectives for both operable units except for the restoration of the groundwater in the southeast corner and the effect that the contamination in the groundwater in the southeast corner might have on the rest of the groundwater.

The western 16.6 acres of this operating landfill were capped in the last half of 1997, after that portion of the landfill reached its permitted elevation. This capping included new gas extraction wells in this western part, some of which are equipped with pumps for leachate extraction, which is now being done. The operation of the landfill has been in compliance with the operating permit obtained from the State.

V. Site Characteristics

The topography surrounding the landfill area is generally relatively flat to gently rolling. The ground surface elevation is approximately 706 feet mean sea level (MSL) at Killbuck Creek. The landfill lies outside of the 100-year floodplain of Killbuck Creek and is not within any designated wetland area. Although an inventory of terrestrial plant and animal species has not been performed, the Site is not known to be inhabited by endangered or threatened species.

Access to that part of the Site closest to Lindenwood Road is

restricted by a chain link fence. Access to the rest of the Site is restricted by other fencing, the creek, and some heavily wooded areas.

The surficial unconsolidated deposits in the area of the Site are predominantly glacial drift ranging from a thin mantle over the dolomite in the bedrock uplands to the east of the Site to greater than 70 feet in the bedrock valley west of the Site. The unconsolidated deposits are predominantly sand and gravel underneath and north of the Site with a silty clay to the south of the Site. The underlying bedrock surface is highly variable. The dolomite bedrock is generally fractured but the intensity is variable. Chert layers or nodules were commonly noted on boring logs as were vugs (void spaces), but cavernous zones were not reported.

During the remedial investigation of the Pagel's Pit site, which was conducted, approximately, from 1988 to 1990, the areas on and around both the Acme Solvent site and the Pagel's Pit site were studied. In recent years, in connection with the operation of the landfill and the establishment of the new landfill to the south of the present one, the landfill operator has been sampling and analyzing many monitoring wells in the area. Selected results of the more recent sampling activities are provided in Table 1. Figure 1 shows the locations of the wells.

The water table occurs in the fractured dolomite bedrock east of and below the eastern quarter of the Pagel's Pit site. Under the remaining three quarters of the Site and west of the Site, the water table occurs in the unconsolidated materials. Groundwater flow in the area of the two sites is generally from east to west in the upper aquifer, slightly toward the north.

Regular monitoring of the groundwater and the leachate at the Site is conducted pursuant to the 1991 ROD and the operating permit that has been issued by the Illinois EPA for the landfill. This has resulted in the installation of additional monitoring wells and the production of further data on the groundwater and the leachate.

Chloride ion serves as an indicator of groundwater that may have been affected by leachate from a landfill. Chloride ion is generally recognized as a conservative, non-reactive parameter in groundwater systems. Based on the April 1998 groundwater data, chloride ion concentrations, the area containing elevated chloride ion concentrations now extends from about midway along the north border of the landfill (east of well B15R) (see Figure 1), around the western end of the landfill, and along the south border of the landfill to at least the southwest area (well G115), and probably back into the southeast area of the site as well. This is the area that may have been affected by leachate from the landfill. It is uncertain whether the elevated chloride ion concentrations in the southeast corner are entirely due to the land-

fill, since there is a septic field to the east into which softener regeneration water has been discharged. Generally, the affected area was relatively close to the waste boundary, but a well on the other side of Killbuck Creek (well G34S) also had an elevated chloride ion concentration. Other wells west of the creek have sometimes had elevated chloride ion concentrations, particularly well G35D, where the chloride ion concentrations have fluctuated between 18 and 530 mg/l in the February 1997 through January 1999 period.

Volatile organic compounds (VOCs) have been found in the shallow aquifer on, and in the vicinity of, both the Pagel's Pit and Acme Solvent sites. VOCs were found both inside and outside of the area defined by elevated chloride concentrations. During the 1988-90 RI, the highest concentrations of VOCs were found in wells on or near the Acme Solvent site. The next highest concentrations were found in the southeast corner of the Pagel's Pit site. During the initial RI a connection between the two areas was not definitely shown, possibly because there was fractured bedrock between and in the two areas through which groundwater would move primarily in the fractures. Well G120B was installed between the two sites, and elevated levels of VOCs were found in water from it. Thus it was shown that at least some of the VOCs present in the southeast corner may have come from the Acme Solvent site. However, it is likely that some of the contamination in the southeast corner is coming from the landfill. Chlorinated benzenes have been found in this area but have not been found in wells closer to the Acme Solvent site. The gradients shown by the water elevations in the monitoring wells show that groundwater is likely flowing away from the waste disposal area into the southeast corner near the waste disposal area.

Applicable groundwater quality standards (AGQSS) have been established for the State of Illinois for substances that may be present at the Pagel's Pit site. The AGQS established for any constituent is the background concentration or an Illinois Pollution Control Board established standard. (See 35 IAC 811.320 for further information about AGQSS. Part 811 of 35 IAC is entitled "Standards for New Solid Waste Landfills".) Background concentration means the concentration of a constituent that is established as the background in accordance with the Illinois regulations. Statistical tests and procedures are used in determining the background concentrations. The AGQSS are used in defining a groundwater management zone (GMZ) in the downgradient direction. A GMZ is a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site. A GMZ is subject to a corrective action process approved by Illinois EPA or the owner or operator undertakes adequate corrective action in a timely and appropriate manner and provides a written confirmation to Illinois EPA. (35 IAC 620.250 and 35 IAC 811.324 and 811.325) The GMZ consists of the area where concentrations exceed the AGQSS. At this site, the GMZ is defined primarily by the extent

of the chloride and ammonia contamination. The AGQS for chloride is 87.5 mg/l and the AGQS for ammonia-nitrogen is 0.9 mg/l. Roughly, the GMZ includes the area from about the mid-points of the waste disposal area on the north and the south borders toward the west to the vicinity of well nests G116 and G34. There is also a zone of attenuation around the waste disposal area within which concentrations of constituents in leachate discharged from the unit may exceed AGQSS. This zone is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste. Once the groundwater in the GMZ returns to acceptable levels, there will no longer be a GMZ. However, the zone of attenuation will always exist.

It is important not to confuse the use of the word "attenuation" here with its use later in "monitored natural attenuation". In the zone of attenuation, it is expected that natural attenuation processes are occurring, but the zone has a fixed physical definition. In monitored natural attenuation, the area being considered is defined by the elevated (above background) concentrations of the contaminants in the groundwater. Here also natural attenuation processes are expected to be occurring.

In the GMZ during 1997 and 1998, tetrachloroethene is the only organic whose concentrations have exceeded the maximum contaminant levels (MCLs), established under the Federal Safe Drinking Water Act) (MCL = 5 µg/l). The MCL for tetrachloroethene was exceeded in wells G116A, G116D, G132, G35S, G39, and P4R. The maximum concentration was 12 µg/l, so the AGQS, which is 26 µg/l, was not exceeded. The concentrations of several other organics exceeded their AGQSS in the GMZ, including those of 1,4-dichlorobenzene in four wells. Three of these wells are in or very close to the zone of attenuation and the fourth is directly downgradient of the landfill. In the "background" wells (well G120B and 4 of the 5 wells (not including well G114) in the southeast corner), the concentrations of several substances exceeded their MCLs: tetrachloroethene in wells G109A and G113A; trichloroethene in wells G120B and G113A; cis-1,2-dichloroethene in well G113A; vinyl chloride in well G113A (the MCL was also exceeded in well G114); and 1,2-dichloropropane in well G113A. The concentrations of a few other organics exceeded their AGQSS in the southeast corner wells, including 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, and chlorobenzene. These numbers demonstrate the low levels of VOCs generally found in the GMZ. They also show the possible influence of the Acme Solvent site on the groundwater in the southeast corner by the presence of several chlorinated ethenes. Well G120B and the wells in the southeast corner are not part of the GMZ since they are not considered to be downgradient of the waste disposal area, although the water elevations indicate that there is apparently side-gradient flow from the waste disposal area in the southeast corner. The fact that chlorinated ethenes and chlorinated benzenes are found at

higher concentrations in the southeast corner wells than in wells further downgradient demonstrates that natural attenuation processes are taking place (see Table 1).

Killbuck Creek is also regularly monitored by the landfill operator. In 1998, none of the major chlorinated ethenes were detected in the creek, nor were several other VOCs, for which analyses were done. The ammonia concentrations in the creek generally increase between the upstream and downstream sampling points, which may indicate an effect from the landfill. However, the chloride concentrations increase only slightly.

The results of the monitoring of the landfill leachate in the 1997 to 1999 period has shown that the chloride and sodium concentrations in the leachate are generally somewhat higher than the ranges for typical landfill leachate. During this period there were no detections of chlorobenzene, 1,4-dichlorobenzene, the two trichlorobenzenes, 1,2-dichloropropane, or any of the major chlorinated ethenes in the leachate.

An investigation for the remedial design of the OU 1 barrier well system found that pumping a well located between the waste disposal area and the creek resulted in a much greater flow rate than had been anticipated when the 1991 ROD was issued. Also, the groundwater downgradient of the landfill was found to contain significant concentrations of ammonia. Ammonia had not been considered in the remedial investigation done for the 1991 ROD. If this groundwater were extracted as part of a system to prevent the movement of the contaminated groundwater downgradient, this ammonia would have to be removed before the treated water could be discharged, unless the concentrations were significantly decreased during pumping because of the introduction of uncontaminated water from the creek, flowing through the ground with the groundwater. Generally, the removal of ammonia would involve raising the pH, stripping, and then lowering the pH to an acceptable level for discharge. These results indicated that the cost of the barrier well system and associated water treatment system would be much greater than had been estimated for the 1991 ROD, and the Agency agreed to defer implementation of the systems until alternatives could be investigated.

VI. Summary of Site Risks

In the 1991 RI a baseline risk assessment was prepared for the Pagel's Pit site to characterize the nature and the magnitude of potential risks to public health and the environment. The potential risks were caused by the chemicals of concern and were based on current and possible future land use. The scenario pertaining to potential future groundwater use as a water supply was found to represent the greatest risk to humans at the Pagel's Pit site. Under this scenario, exposure occurs through groundwater ingestion and from dermal contact and inhalation while bathing. The calculation was done for the groundwater west of

Lindenwood Road, including the southeast corner. The calculated cumulative hazard index of 5, not including cobalt exposure (found in only one well), compared to the Superfund goal of 1, indicated that exposure to noncarcinogens in the groundwater may cause adverse health effects. The majority of the value of the hazard index was due to exposure to the 1,2-dichloroethenes, thallium, and zinc. The calculated cumulative cancer risk of 1×10^{-3} exceeded the USEPA target risk range of 10^{-4} to 10^{-6} . The majority of this was due to exposure to vinyl chloride and arsenic.

For the following discussion, it may be helpful to consult Table 1 and Figure 1. The total 1,2-dichloroethene concentration (the lesser of the 95% upper-bound confidence limit of the arithmetic mean or the maximum concentration detected) used in the calculation for the risk in 1991 was 240 $\mu\text{g/l}$. (A risk or hazard quotient (the sum of the hazard quotients for substances that cause a similar effect is the hazard index) is directly proportional to the concentration. If the concentration has decreased, so has the risk or hazard quotient.) In April 1998, 1,2-dichloroethene was detected five times (all of the cis isomer) in the groundwater west of Lindenwood Road (31 wells): 98 $\mu\text{g/l}$ in well G113A in the southeast corner and concentrations ranging from 6 to 7 $\mu\text{g/l}$ in four downgradient wells. The detection limit was 5 $\mu\text{g/l}$. The dissolved thallium concentration used for the 1991 risk assessment was 2.8 $\mu\text{g/l}$ (ranging from 2 to 6 $\mu\text{g/l}$). In April 1998, total thallium (dissolved thallium was not analyzed for) was detected two times at about 5.3 $\mu\text{g/l}$ in wells in the same general area. The detection limit was 5 $\mu\text{g/l}$. No thallium was detected in the leachate in the 1997 through early 1999 period, with detection limits of 1.5, 2.2, and 100 $\mu\text{g/l}$. The dissolved zinc concentration used for the 1991 risk assessment was 6.3 mg/l (ranging from 0.037 to 6.34 mg/l). In April 1998, dissolved zinc was detected 25 times in the wells west of Lindenwood Road (out of 31 wells), ranging in concentration to 9.27 mg/l (in well G109A, in the southeast corner, where the next highest concentration was 1.73 mg/l in well G109; the maximum in the downgradient wells was 4.18 mg/l). All but one of the dissolved zinc detects were below 6.3 mg/l . The detection limit was 0.022 mg/l . The vinyl chloride concentration used for the 1991 risk assessment was 14 $\mu\text{g/l}$. In April 1998, vinyl chloride was detected one time, at 15 $\mu\text{g/l}$, and this was in a southeast corner well. The detection limit was 2 $\mu\text{g/l}$. The dissolved arsenic concentration used for the 1991 risk assessment was 8.4 $\mu\text{g/l}$ (ranging from 2 to 46 $\mu\text{g/l}$). In April 1998, dissolved arsenic was detected 10 times, ranging in concentration to 25 $\mu\text{g/l}$, but 8 of the detections were below 8.4 $\mu\text{g/l}$. The detection limit was 2 $\mu\text{g/l}$. Thus the concentrations of the substances that were the significant contributors to the risks calculated in 1991 have generally decreased or remained similar to previous levels. Since the risks and hazard quotients are directly proportional to the concentrations, the risks and hazard quotients have generally decreased or remained similar. Although the risks and hazard quotients have

not been recalculated for this ROD, it is clear that risks are still present above USEPA's requirements for remedial action. Some MCLs are being exceeded.

VII. Remedial Action Objectives

The remedial action objectives that guided the selection of a remedy for this site in the 1991 ROD and this ROD are:

- 1) Restore the aquifer outside the waste disposal area and the surrounding zone of attenuation to drinking water standards within a reasonable time frame. Currently, based on a groundwater flow model, a reasonable time frame for observing significant reductions in groundwater impacts downgradient is 7 to 10 years.
- 2) Minimize future migration of groundwater contamination.
- 3) Reduce or eliminate future contamination of groundwater.
- 4) Reduce or eliminate the direct contact threat of contaminated soils and wastes.
- 5) Minimize or eliminate contaminant migration to the groundwater and surface waters to levels that ensure the beneficial use of the resources.
- 6) Minimize or eliminate the threat of exposure to landfill gas.

VIII. Description of Alternatives

There are low concentrations of VOCs in the groundwater west of the waste disposal area. The landfill owner now owns land on the west side of Killbuck Creek, which had not been owned when the 1991 ROD was issued. Illinois EPA, which issued and enforces the operating permit, has agreed that the best course of action for the groundwater would be to monitor the situation to make sure that the AGQs were not exceeded beyond the GMZ and to determine if capping the wastes and removing most of the leachate would lead to reductions in the concentrations of contaminants in the groundwater.

The main methods evaluated as alternatives for the barrier well system of the 1991 ROD were an air sparging system (in which air would be injected into the groundwater in place to strip the few volatile organics from the water and possibly decrease the ammonia concentrations) and monitored natural attenuation. Monitored natural attenuation refers to the reliance on natural attenuation processes, in a carefully controlled and monitored cleanup approach, to achieve site-specific remedial objectives within a time frame that is reasonable compared to that offered by other more active methods. The natural attenuation processes that are

at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater.

Therefore, four alternatives have been considered for the groundwater of OU 1, essentially all of the groundwater at and near the Site where contamination has occurred:

- in-situ air sparging system;
- monitored natural attenuation which includes a contingency component;
- no change, that is, the barrier well system specified in 1991 along with treatment of the extracted groundwater; and
- no action.

The first three alternatives include a requirement for additional deed restrictions (more than one if separate pieces of property are involved). These deed restrictions are to be placed or sought on property west of Killbuck Creek under which the groundwater is contaminated. These deed restrictions will be to prevent the use of the groundwater on the property as a drinking water supply.

The contingency component of the monitored natural attenuation alternative would be implemented if it were determined that the extent of the groundwater contamination was increasing downgradient (that is, if a statistical analysis of the groundwater concentrations definitely showed an increasing trend) 7 to 10 years after final capping of the waste disposal area when the full effect of the source control measures would have reached the downgradient area, based on modeling, or if the groundwater contamination became a threat to a water supply well. This contingency remedy would be an active remedy and might consist of the barrier well system of the 1991 ROD, the air sparging system that has been investigated, or some other means of addressing the contamination in an active manner. The system selected would have to be one acceptable to Illinois EPA and USEPA, and it must be a system that would lead to the restoration of the downgradient groundwater to beneficial use. All the alternatives, except the no-action one, require that the plume of contamination be properly tracked. This may require additional monitoring wells toward the west since the GMZ is presently at the westernmost wells.

The landfill operator's contractor did a preliminary design of the air sparging system, in which air would be injected into the groundwater through wells and would be collected in adjacent wells, really a combination of air sparging and soil vapor extraction. The contractor also considered some other possible alternatives for treatment of water extracted as part of a barrier well system, the remedy of the 1991 ROD.

The contractor estimated the costs for the air sparging system and an ex-situ system similar to the barrier well system with air stripping for the extracted water that was selected in the 1991 ROD (identified as Alternative 6). For the "air sparging system", the estimated capital costs were \$420,000 and the annual operation and maintenance costs were \$37,000 (1995). The contractor's estimates for the air stripping system (which includes the extraction system) were \$3,100,000 for capital costs and \$780,000 for the annual operating and maintenance costs. The groundwater part of the 1991 Alternative 6 was estimated at about \$320,000 for capital costs and about \$95,000 annual operating costs in the 1991 feasibility study report. The differences are primarily due to an estimated flow of 100 gpm in 1991 and 500 gpm for this study and the need for stripping the ammonia in the 1995 study, which was not included in the 1991 estimate. A cost estimate for monitored natural attenuation was not prepared. Not including the costs for the contingency remedy, which has not been specified and consequently cannot be costed, its costs would be primarily for monitoring and the analyses needed to periodically evaluate the conditions and compare them to the expectations. This cost will be below the cost of the above two active systems. The no-action remedy would also include monitoring of the groundwater, so it does have some costs associated with it, which also have not been determined but would be lower than the other three alternatives.

For the groundwater in the southeast corner (OU 2), three alternatives have been considered:

- actively remediate this water separately from the rest of the groundwater at the Site with a pump-and-treat or similar system, and have a deed restriction placed on the property;
- handle this groundwater with the rest of the contaminated groundwater at the Site after it mixes with this groundwater, designated the institutional controls alternative since a deed restriction would have to be placed on the property; and
- no action.

The deed restriction will be to prevent the use of the groundwater on the southeast corner property as a drinking water supply. The property where the deed restriction will be placed will include the area where well nests G109 and G113 and wells G114, G110, and B13 are located and will include that area excluded from the Superfund site defined in the 1993 Consent Decree that was designated the southeast corner.

All three alternatives include a requirement for monitoring the groundwater in the southeast corner, which is presently being done. Already there is the pump-and-treat system operating at the Acme Solvent site, which began operation in July 1995. This system is expected to reduce the organic contamination in the southeast corner groundwater. The cap that is to be completed on

the rest of the landfill, along with the improved control of leachate elevations, are also expected to reduce the contamination entering the groundwater in the southeast corner. Together these provide source control for the groundwater here. And, as mentioned earlier, the concentrations of many of the VOCs, the major contaminants of concern in the southeast corner groundwater, are higher here than further downgradient, indicating that natural attenuation processes are functioning.

IX. Summary of Comparative Analysis of Alternatives

This section discusses the nine evaluation criteria with regard to the alternatives that have been considered for the remedy for OU 2 and the remedy change for OU 1.

1. Overall Protection of Human Health and the Environment

At present there is no exposure for humans or animals to the contaminated groundwater, either downgradient from the Site or in the southeast corner. There may be some exposure to the contamination through contact with water from the creek. However, during the RI done for the 1991 ROD no unacceptable risks were identified for this pathway. Future exposure to contaminated groundwater will be prevented by institutional controls that are in place or will be put into place in all but the strictly no-action alternatives. In addition, the groundwater will be monitored to make sure that the area of contaminated groundwater is well defined and is not changing or spreading in a manner that would pose unacceptable human health or environmental risks. Using the institutional controls alternative for the southeast corner groundwater would not be expected to significantly change the rest of the groundwater at the Site downgradient from there.

2. Compliance with Applicable or Relevant and Appropriate Requirements

The operation of the landfill is controlled by the Illinois EPA as part of its permitting responsibilities. Operation of the landfill is required to be in compliance with all applicable or relevant and appropriate requirements (ARARs) of the state and federal governments. The landfill operator's compliance with its permit will assure that the landfill is complying with the ARARs. Except in the case of no action, the other alternatives for OU 1 comply with the permit requirements. Regarding the southeast corner, the sources of the contamination there have been or will be controlled and this is expected to result in the contamination in this groundwater returning to acceptable levels.

3. Long-term Effectiveness and Permanence

The goal is to restore the groundwater outside the zone of attenuation to beneficial use once the landfill is fully closed. The capping of the landfill and the removal of the leachate and

the prevention of contamination from the Acme Solvent site will control the sources of groundwater contamination. All the proposed alternatives are expected to lead to the restoration of the groundwater to beneficial use. Capping of a landfill is considered effective and, with the required maintenance, permanent.

4. Reduction of Toxicity, Mobility, or Volume (TMV) Through Treatment

Most of the reduction in toxicity, mobility, or volume will be obtained through the extraction of leachate from the landfill and its subsequent treatment in the local wastewater treatment plant. The pump-and-treat system at the Acme Solvent site is also reducing the contamination in the groundwater. Ex-situ treatment of groundwater at or downgradient of the Pagel's Pit site would also provide some reduction of toxicity, mobility, or volume, as would an in-situ treatment system. Such treatment is not expected to be needed with the monitored natural attenuation alternative, but there is a contingency for using treatment if it is necessary. There would be no treatment with the institutional controls alternative for OU 2 or for the no-action alternatives for the groundwater of OU 1 or for OU 2.

5. Short-term Effectiveness

The implementation of any of the alternatives should not present any additional exposures of humans or the environment to the contamination, with the possible exception of site workers installing any wells. Although the contamination might possibly be reduced more quickly with an extraction and treatment system or an in-situ process than with monitored natural attenuation, such a system might result in exposures to humans and the environment as the contaminants are being removed (volatiles being stripped from the water and/or generation of a sludge that may contain hazardous substances).

6. Implementability

There are no anticipated problems associated with implementing any of the alternatives. If the active groundwater remediation contingency were implemented, some investigation and development would probably be needed to design an effective system.

7. Cost

Monitored natural attenuation is expected to be much more cost-effective than the implementation of an extraction and treatment system immediately for groundwater remediation. This can be seen from the cost figures presented above.

8. State Acceptance

The Illinois Environmental Protection Agency has verbally concurred with this Record of Decision and has prepared a Letter of Concurrence for the selected remedies. Upon receipt of the Letter of Concurrence, the USEPA will include it in the Administrative Record for this site.

9. Community Acceptance

Community acceptance of the selected remedy is discussed in the Responsiveness Summary (Appendix B).

X. Selected Remedy

Description of the Institutional Controls Selected Remedy for OU 2--Southeast Corner Groundwater

In the area of the Pagel's Pit site the general direction of flow of the groundwater is toward the west. This will result in most, if not all, of the contaminated groundwater moving toward the west and mixing with the contaminated groundwater already there. At the Acme Solvent site a pump-and-treat system has been installed to block the migration of contamination from that site into the southeast corner of the Pagel's Pit site (and other areas to the west of the Acme Solvent site). The VOC contamination in the groundwater at well G120B, which is west of the extraction wells for the Acme Solvent site, has dropped from a concentration of 149 µg/l in 1992 to about 35 µg/l in 1997 to 1998. The organic contaminant concentrations in the southeast corner are generally greater than they are further downgradient, indicating that natural processes are attenuating these contaminants. The eventual capping and leachate removal called for by the 1991 ROD for the waste disposal area at the Pagel's Pit site, after the present waste disposal area (called the north unit) reaches capacity, which is presently expected to happen within about 2 years, should reduce or eliminate leakage of leachate from this landfill into the southeast corner. The southeast corner property is owned by the operator of the present landfill; this operator has control over use of this property. Deed restrictions have been placed on the property being used for the present landfill that prevent the use of the groundwater there for a water supply, and a deed restriction will be placed on the southeast corner for the same purpose. A new landfill (called the south unit) is being developed to the south and southwest of the southeast corner, which will further restrict possible future uses of the property and the property immediately surrounding it. There appears to be no compelling reason for addressing the groundwater in the southeast corner separately from the rest of the groundwater at the site.

For these reasons, the institutional controls remedy has been selected for the groundwater in the southeast corner (OU 2). The

contamination here will be addressed as this contamination becomes a part of the groundwater associated with the rest of the Site. This remedy does require continued monitoring of the groundwater in the southeast corner.

Description of the Selected Remedy Change for the OU 1 Groundwater

When it was determined that if the groundwater extraction and treatment system of the 1991 ROD were to be implemented, the amount of work would be greatly increased because of the higher yield of the aquifer and the presence of significant amounts of ammonia, another means of addressing the contaminated groundwater west of the waste disposal area was sought. Pursuant to the Illinois solid waste regulations in 35 IAC 811.324-326, the operator has developed, with the approval of the Illinois EPA, a corrective action plan that addresses the contaminated groundwater at the facility. This corrective action plan is essentially monitored natural attenuation with source control. The acceptance of the corrective action plan by the Illinois EPA establishes a groundwater management zone (GMZ) in which groundwater is being managed to mitigate impaired water quality due to the presence of contaminants. The currently accepted Illinois EPA corrective action is construction of a 35 IAC 811 compliant cap, extraction of leachate utilizing a system of vertical wells, and monitoring of groundwater quality within the GMZ to determine the effectiveness of source removal and control. The western 16.6 acres of the landfill have been capped, finishing in late 1997, and in the spring of 1999 significant extraction of leachate has finally begun; there had been a delay because of the failure of the initial pumps tried. The levels of organic contamination along the western border of the landfill are not high. As discussed above, the contamination west of Lindenwood Road has been decreasing or holding somewhat steady. The lower levels of organic contamination west of the landfill as compared to the levels in the southeast corner demonstrate that natural attenuation processes are acting in the area. The capping of the landfill and the reduction of the leachate level is expected to further decrease the contamination in the groundwater. The operation of the pump-and-treat system at the Acme Solvent site will also reduce the contamination reaching this Site; this is another part of the source control. Since the 1991 ROD was issued, the landfill operator has obtained additional property to the west of the site, which is west of Killbuck Creek, and therefore has control over this property. The operator has also constructed a replacement wetland on part of this property, next to the creek, which limits the use of this part of the property. There has been no indication that water supply wells at the residences to the northwest of the landfill have been affected by the landfill, or have even been immediately threatened.

For these reasons, but primarily because the sources of the contamination are being controlled, monitored natural attenuation

has been selected for the remedy change for the groundwater of OU 1. The monitored natural attenuation replaces the barrier well system, which is the groundwater extraction along the west side of the Site and the treatment for disposal of this water, which was selected in the 1991 ROD. The monitored natural attenuation remedy includes the imposition of deed restrictions on the property west of Killbuck Creek under which the groundwater is contaminated at levels which make it unsafe for use as a source of drinking water, the requirement that the monitoring well network to the west fully define the extent of the plume of contamination, and the inclusion of a contingent remedy in case the groundwater contamination does not appear to be decreasing or begins to threaten properties further to the west. The deed restrictions will be to prevent the use of the groundwater as a drinking water supply on property to the west where the groundwater is contaminated at unacceptable levels. The contingency component of the monitored natural attenuation alternative would be implemented if it were determined that the extent of the groundwater contamination was increasing downgradient of the Site (that is, if a statistical analysis of the groundwater concentrations definitely showed an increasing trend) 7 to 10 years after final capping of the waste disposal area when the full effect of the source control measures would have reached the downgradient area, based on modeling, or if the groundwater contamination became a threat to a water supply well. This contingency remedy would be an active remedy and might consist of the barrier well system of the 1991 ROD, the air sparging system that has been investigated, or some other means of addressing the contamination in an active manner. The system selected would have to be one acceptable to Illinois EPA and USEPA, and it would be a system that would lead to the restoration of the downgradient groundwater to beneficial use.

XI. Statutory Determinations

The Proposed Plan for the remedy for OU 2 and the change of part of the remedy for OU 1 for the Pagel's Pit site was released for public comment in August 1999. The Proposed Plan identified the "no action" remedy for OU 2 and monitored natural attenuation for the change in part of the remedy for OU 1 as the preferred alternatives. USEPA has reviewed all written and oral comments received during the comment period. Upon review of these comments, USEPA has determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, are necessary, except that the no action for OU 2 has been modified to include a deed restriction in the southeast corner (and is designated the institutional controls remedy).

A. Protection of Human Health and the Environment

The baseline risk assessment performed for the Pagel's Pit site for the 1991 ROD identified one exposure scenario that resulted in noncarcinogenic health effects that may be of concern and can-

cer risks that are substantially greater than the USEPA's suggested risk range. This scenario was for the use of the contaminated groundwater at the site as a water supply, and the exposures were due to ingestion of and dermal contact with the water and inhalation of vapors that might arise from the water. These risks are addressed by the selected remedies. The groundwater of the southeast corner (OU 2) is not available as a source of drinking water. The groundwater of OU 1 will also not be available in the affected areas until the contamination has decreased to acceptable levels, either through the natural attenuation processes or through the implementation of the contingent remedy. The acceptable levels will be the lesser of: a) a cancer risk of no more than 1×10^{-5} and a HI of no more than 1.0 or contaminant concentrations below the MCLs, which were specified in the 1991 ROD; or 2) less than the AGQSS established in conjunction with the corrective action presently being implemented.

Any operational systems that might be needed for the implementation of the selected remedies (for example, an air stripper if the contingent remedy for OU 1 becomes necessary) must not expose anyone to cancer risk greater than 1×10^{-4} or a HI greater than 1. Discharges of any treated water to Killbuck Creek will be regulated by the NPDES (National Pollutant Discharge Elimination System) requirements, which will ensure that the remedial action does not adversely affect the stream.

Based on the levels of contaminants detected in the aquatic ecosystem, ecological effects are not expected. Based on the fact that the groundwater is the main means by which contamination is transported, terrestrial ecosystem effects are not expected.

B. Compliance with Applicable or Relevant and Appropriate Requirements

Either of the selected remedies will meet all identified applicable or relevant and appropriate requirements, both Federal and State. The following ARARs have been identified for the Site and its remediation:

Chemical specific

- SDWA national primary drinking water standards (40 Code of Federal Regulations (CFR) 141)
- Clean Air Act (CAA) national ambient air quality standards (NAAQS) (40 CFR 50)
- CAA national emission standards for hazardous air pollutants (NESHAPs) (40 CFR 61)
- Illinois water quality standards (35 Illinois Administrative Code (IAC) 302)
- Illinois general effluent standards (35 IAC 304)
- Illinois sewer discharge criteria (35 IAC 307)
- Illinois air quality standards (35 IAC 243)

Action specific

- CWA NPDES administered permit programs (40 CFR 122)
- CWA NPDES standards (40 CFR 125)
- CWA pretreatment standards (40 CFR 403)
- RCRA definition and identification of hazardous waste (40 CFR 261)
- RCRA standards for generators of hazardous waste (40 CFR 262)
- RCRA standards for transport of hazardous waste (40 CFR 263)
- Occupational Safety and Health Act (OSHA) general industry standards (29 CFR 1910)
- OSHA safety and health standards for construction (29 CFR 1926)
- Department of Transportation (DOT) rules for transportation of hazardous materials (49 CFR 107, 171)
- Illinois regulations for groundwater quality (35 IAC 620)
- Illinois regulations for solid waste (35 IAC 807)
- Illinois regulations for special waste hauling (35 IAC 809)
- Illinois regulations for solid waste disposal (35 IAC 810)
- Illinois standards for new solid waste landfills (35 IAC 811)
- Illinois regulations for permit application (35 IAC 812)
- Illinois procedural requirements for permitted landfills (35 IAC 813)
- Illinois standards for existing landfills and units (35 IAC 814)
- Illinois procedural requirements for exempt landfills (35 IAC 815)
- Illinois waste disposal regulations (35 IAC 702, 703, 705, 720, 721, 722, 723, 724)
- Illinois landfill regulations (35 IAC 729)
- Illinois regulations for prohibition of air pollution (35 IAC 201)
- Illinois regulations for emissions of fugitive and particulate matter (35 IAC 212)
- Illinois organic air emission standards (35 IAC 215)
- Illinois NPDES permit regulations (35 IAC 309)
- Illinois pretreatment programs (35 IAC 310)
- Illinois treatment plant operator plant certification (35 IAC 312)
- Illinois recommended standards for sewer works (35 IAC 370)
- Illinois regulations for major stationary sources construction and modification (35 IAC 203)
- Illinois sulfur limitations (35 IAC 214)
- Illinois carbon monoxide emissions for incinerators (35 IAC 216)
- Illinois nitrogen oxide emissions, fuel combustion (35 IAC 217)
- Illinois sound emission standards and limitations (35 IAC 901)

Location specific

- National Environmental Policy Act, wetlands and floodplains and fish and wildlife (40 CFR 6)
- Illinois counties, floodplain regulation (55 ILCS 5/5-40001)

To Be Considered Criteria

- SDWA maximum contaminant level goals (40 CFR 141.50)

C. Cost-Effectiveness

Cost-effectiveness is the most decisive consideration in the choice of the selected remedies. The selected remedies are protective and they comply with the ARARs. Although it will probably take longer for the groundwater to reach the levels necessary for its beneficial use with monitored natural attenuation, this additional time is not expected to be unreasonable. Addressing the groundwater in the southeast corner as just a part of the groundwater at the Site is the most reasonable and cost-effective response.

D. Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable (MEP)

USEPA believes that the alternatives selected, combined with the parts of the remedy selected in the 1991 ROD that have not been changed, represent the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner. The selected alternatives provide the best balance of long-term effectiveness and permanence, reduction of TMV through treatment, short term effectiveness, implementability, and cost, taking into account the statutory preference for treatment as a principal element as well as state and community acceptance.

E. Preference for Treatment as a Principal Element

This site is a sanitary landfill, and it is generally recognized that containment will be the main method of addressing the wastes, which pose only relatively low, long-term threats to human health and the environment. Treatment of the leachate in the local publicly owned treatment works (POTW) and the utilization of the landfill gas, or burning it, which were specified in the 1991 ROD, and the possible treatment of the groundwater if the contingent remedy is required are the extents to which treatment has been used.

This remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The size of the landfill and the fact that no on-site hot spots representing major sources of contamination have been located preclude a remedy in which contaminants could be excavated and treated effectively. No principal threat has been identified at the site.

F. Five-Year Review Requirements

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

XII. Explanation of Change

Since the release of the Proposed Plan, it has been discovered that the 1993 Consent Decree did not result in placing a deed restriction on the southeast corner property to prevent the installation of water supply wells there. That Consent Decree did result in the placement of such a restriction on the rest of the Superfund site defined in the document. Therefore, for this ROD the alternatives for the southeast corner groundwater (OU 2) have been expanded and modified by adding the institutional controls alternative and modifying the remediation alternative by adding a requirement for deed restrictions. The remedy selected here is the institutional controls alternative rather than the strictly no-action alternative. USEPA does not believe that this is a major change, and that this change could be anticipated. It was made because it was believed that the deed restriction in place included the southeast corner. The net result of the change made here is to bring the Site to the condition that the Proposed Plan had proposed.

Table 1. Selected Analytical Results

Substance	Units	MCL ^a	AGQS	Conc. Range--120B	Conc. Range--SEC	Conc. Range--DG	C
vinyl chloride	µg/l	2	17	ND	4 to 15	ND	
cis-1,2-dichloroethene	µg/l	70	150	20 to 23	9 to 98	6 to 9	
trichloroethene	µg/l	5	66	6 to 7	21 to 42	5	
tetrachloroethene	µg/l	5	26	ND	8 to 15	6 to 12	
benzene	µg/l	5	2.8	ND	2	2 to 3	c
chlorobenzene	µg/l	100	5	ND	18 to 24	ND	d
1,4-dichlorobenzene	µg/l	75	3.7	ND	23 to 37	6 to 13	d
thallium	µg/l	2	200	ND	ND	2 to 9	e
manganese (dis)	µg/l	b	1480	ND	28 to 2800	20 to 1400	f, j
arsenic (dis)	µg/l	50 ^a	2	ND	17 to 35	2.6 to 25	g, j
zinc (dis)	mg/l	b	236	0.107	0.11 to 9.27	0.025 to 4.18	h, j
ammonia-nitrogen (dis)	mg/l		0.9	0.09 to 0.44	0.12 to 1.04	0.1 to 164	
chloride (dis)	mg/l	b	87.5	12.9 to 18.6	3.4 to 181	7.2 to 485	i

Note: Conc. Range is the range of concentrations where there were detects for the May 1997 and April 1998 sampling events. There may also have been non-detects. In the comments below, only the results for these two sampling events are considered unless something else is specifically mentioned. Bolded numbers are concentrations that exceed the MCL. ND means the substance was not detected. The abbreviations used in the table are: MCL = maximum contaminant level; AGQS = applicable groundwater quality standards (generally a background concentration); C = comments. The area designations are: DG = downgradient (all wells west of the southeast corner); SEC = southeast corner (wells G113, G113A, G109, G109A, and G114); 120B = well G120B, the well between the Acme Solvent site and the landfill. Under substances, "dis" means that the dissolved concentrations are being used rather than the total; dissolved concentrations are determined using samples that are filtered when they are obtained.

Comments (C):

- Maximum contaminant levels (MCL) are for total quantity present, not just the dissolved amount.
- Secondary maximum contaminant levels (SMCLs) are not health based; they are for total quantity present, not the dissolved amount. For manganese, SMCL = 50 µg/l; for zinc, SMCL = 5 mg/l; for chloride, SMCL = 250 mg/l.
- The few benzene detects were in wells very close to the landfill.
- The only detects of chlorobenzene and 1,4-dichlorobenzene in the southeast corner were in well G114.
- For thallium, in 1997 there were 2 detects in the 18 wells sampled and in 1998 there were 2 detects in the 26 wells sampled downgradient. The high value of AGQS for thallium is reportedly due to a high detection

value during one of the rounds of sampling used for determining the AGQS. Only total thallium is being determined now; during the RI dissolved thallium was determined.

- For dissolved manganese, the highest value in the southeast corner was found in well G114 in May 1997. The next highest concentration measured in this well in the 9 quarterly samples between 2/97 and 1/99 was 440 µg/l. In the 5/97 and 4/98 samplings, the next highest concentration measured in the southeast corner was 769 µg/l. In the downgradient area, in 5/97, the concentrations of 11 of 18 samples exceeded the SMCL, in 4/98, 12 of 26 exceeded, and in 5/99, 13 of 26 exceeded.
- The only detects of dissolved arsenic in the southeast corner were in well G114.

- For dissolved zinc, in 1997 there were 0 detects that exceeded the SMCL in the 18 downgradient wells sampled and in 1998 there were 0 detects that exceeded the SMCL in the 26 downgradient wells sampled. In 1997 and 1998 the only detects that exceeded the SMCL were in well G109A. For total zinc, there were 2 detects in 1997 and 3 detects in 1998 that exceeded the SMCL. The AGQS for total zinc is 622 mg/l.

- For dissolved chloride in the southeast corner, the lowest detects were in well G114, which had the only detects of chlorobenzene and 1,4-dichlorobenzene, which are suspected as coming from the landfill, and the only detects of dissolved arsenic. In the downgradient area, the highest concentrations are generally in the wells close to the landfill. In a few cases where this was not the case, the dissolved chloride concentrations in those wells tended to fluctuate over a wide range with time.

- Concentrations of the dissolved substance are being used for manganese, zinc, and arsenic because these were used in the RI.

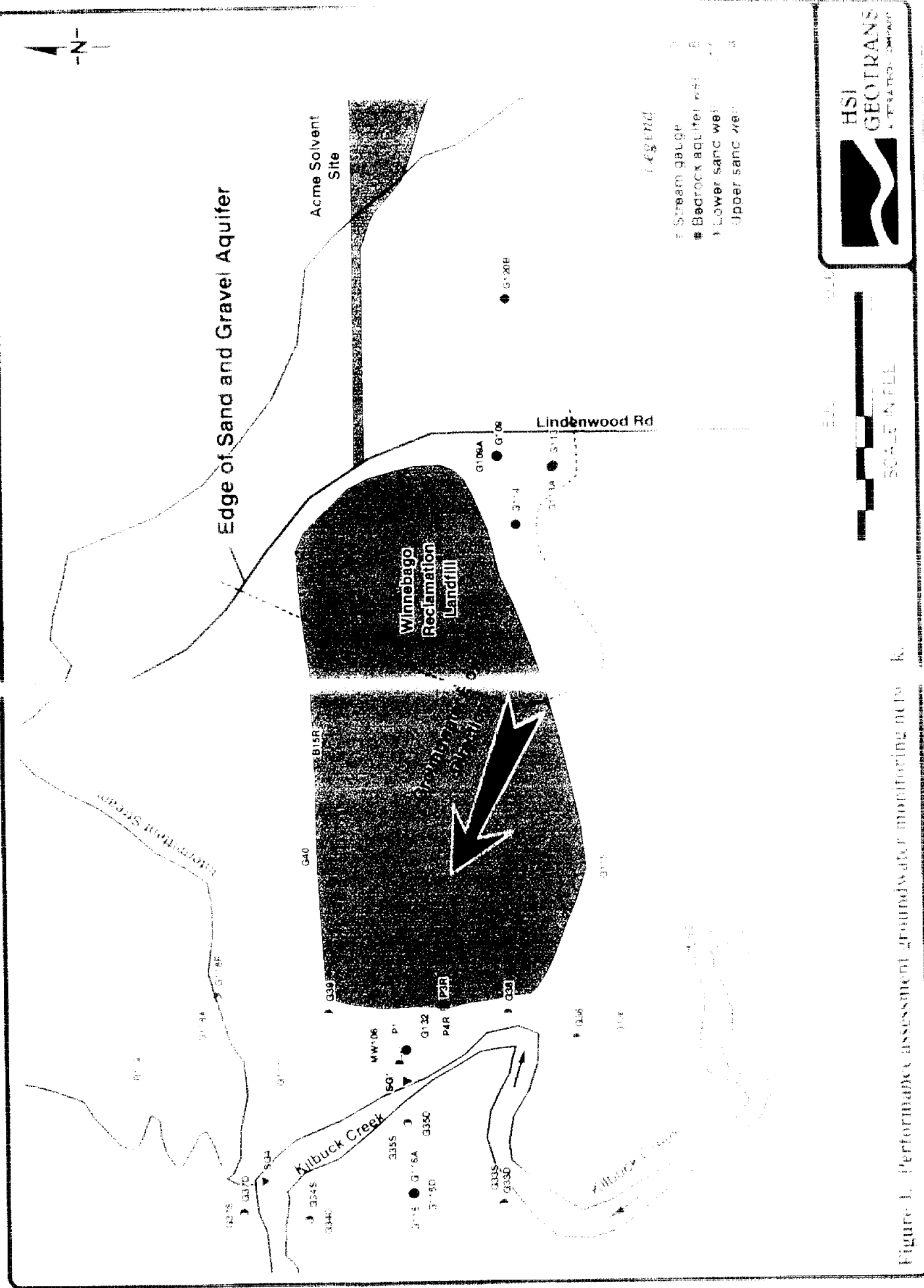


Figure 1. Performance assessment groundwater monitoring network.

Appendix A
Administrative Record Index

ADMINISTRATIVE RECORD INDEX
PAGEL'S PIT LANDFILL SITE
ROCKFORD, ILLINOIS

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3	75/11/20	Letter re: Receipt of series of requests for issuance or renewal of certain supplemental permits	Michael W. Rapps, USEPA	Rockford Blacktop Constr.	Correspondence	1	
5	80/04/28	Letter Re: Hydrogeologic Investigation, Pagel Pit Landfill	Steven G. Wittmann and Daniel R. Viste, Warzyn Engineering, Inc.	C. Howard, Blktop Constr.	Correspondence	2	
4	80/10/10	Letter re: Leachate for the EP Toxicity Test for Pagel Pit	Violet Chen, Sanitary District of Rockford	W. Foristal, RSSI	Correspondence	3	
9	84/04/30	Letter re: Attached copies of Pagel Pit leachate analysis	Richard W. Eick, Sanitary District of Rockford	D. Favero, IEPA	Correspondence	4	
2	84/10/19	Letter re: Proposed Amendment to CERCLA National Priorities List	Ridgway M. Hall, Crowell & Moring	W. Nedeman, USEPA	Correspondence	5	
2	84/10/22	Letter re: Proposed Amendment to CERCLA National Priorities List	Ridgway M. Hall, Crowell & Moring	L. Friedman, USEPA	Correspondence	6	
1	84/10/22	Letter re: Proposed Addition of Pagel's Pit to the National Priorities List	Ridgway M. Hall, Crowell & Moring	R. Bartlett, USEPA	Correspondence	7	
3	84/12/06	Letter re: Proposed Amendment to the CERCLA National Priorities List	Ridgway M. Hall, Crowell & Moring	W. Nedeman, USEPA	Correspondence	8	
7	85/03/27	Letter re: Supplement to Comments in Response to EPA's Notice of Proposal to Add Sites to the CERCLA National Priorities List (Proposed October 15, 1984)	Ridgway M. Hall, Jr., Crowell & Moring	D. Favero, USEPA	Correspondence	9	
9	85/07/12	Letter re: Groundwater level monitoring	James A. Hill and Daniel W. Hall, Warzyn Engineering	C. Howard, Winnebago	Correspondence	10	

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1	86/08/28	Letter re: Administrative Order by Consent and the date of the press release	Lisa Seglin, USEPA	R. Hall, Crowell & Moring	Correspondence	11	
2	86/10/09	Letter re: Comment period on the Administrative Consent Order (receipt attached)	Lisa S. Seglin, USEPA	G. Marzorati	Correspondence	12	
2	87/01/21	Letter re: Pagel's Pit Administrative Order by Consent, USEPA's comments on Receptor/Pathway Analysis	David Favero, USEPA	G. Marzorati, Winnebago	Correspondence	13	
1	87/10/08	Letter re: Warzyn Project Manager for the Remedial Investigation activities	James A. Hill and Daniel W. Hall, Warzyn Engineering, Inc.	D. Favero, USEPA	Correspondence	14	
2	88/04/22	Letter re: Comments concerning sampling at Pagel's Pit	Robert T. Kay, United States Department of Interior	K. Waldvogel, USEPA	Correspondence	15	
6	89/05/25	Letter re: Enclosed copies of stream flow and water quality data for Killbuck Creek south of New Milford	Robert Kay, United States Department of Interior	B. Schorle, USEPA	Correspondence	16	
3	89/05/31	Letter re: Round IV Leachate Sampling Pagel's Landfill	James A. Hill, Warzyn Engineering, Inc.	B. Schorle, USEPA	Correspondence	17	
15	89/10/16	Letter re: Comments concerning technical matters at Pagel's Pit	Robert Kay	B. Schorle, USEPA	Correspondence	18	
1	89/10/20	Letter re: Locations of additional wells	Bernard J. Schorle, USEPA	G. Marzorati, Winnebago	Correspondence	19	
8	89/10/24	Letter re: Project Status, Winnebago Reclamation Landfill, Remedial Investigation	James A. Hill and Gary E. Parker, Warzyn Engineering Inc.	B. Schorle, USEPA	Correspondence	20	

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4	89/11/13		Letter re: Response to letter of October 20, 1989 requesting Respondents undertake certain additional work	James A. Mill and Gary E. B. Schorle, USEPA Parker, Warzyn Engineering Inc.		Correspondence	22
3	90/01/15		Letter re: Update of Table 3 in QAPP, Winnebago Reclamation Landfill	Gary E. Parker, Warzyn Engineering, Inc.	B. Schorle, USEPA	Correspondence	23
4	90/03/09		Letter re: Additional wells in the area between Crowell & Moring Winnebago Reclamation Landfill and the Acme Solvent sites	Ridgway M. Hall, Jr.	S.Kaiser, USEPA	Correspondence	24
2	90/05/03		Letter re: March 9, 1990 letter setting forth proposal to share costs and responsibility for the installation of additional groundwater sampling wells	Steven P. Kaiser, USEPA	R. Hall, Crowell & Moring	Correspondence	25
2	90/10/01		Letter re: Update on status of plan to develop additional landfill space in area south of existing Pagel's Landfill	Gary L. Marzorati, Winnebago Reclamation Service, Inc.	B. Schorle, USEPA	Correspondence	26
1	90/10/05		Letter re: Request for ARARs and TBCs	Bernard J. Schorle, USEPA	P. Takacs, IEPA	Correspondence	27
5	90/11/27		Letter re: Identification of ARARs	Paul E. Takacs, Illinois Environmental Protection Agency	B. Schorle, USEPA	Correspondence	28
17	90/11/30		Letter re: Pagel's Pit Site--ARARs	Bernard J. Schorle, USEPA	G. Parker, Warzyn Eng.	Correspondence	29
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10	90/10/00		Proposed Plan for the Acme Solvent Reclaiming, Inc. Superfund Site	USEPA		Fact Sheets	32
2	90/10/29		Pagel's Pit Alternatives Array	Judy Kleiman, USEPA	B. Schorle, USEPA	Memorandum	33
4	90/11/02		Memo re: Water Division Review of Draft Alternative Array Report	Dale S. Bryson, USEPA	D. Ullrich, USEPA	Memorandum	34
2	90/11/05		Memo re: Alternatives Array Document(AAD)	William Beyer, USEPA	B. Schorle, USEPA	Memorandum	35
2	90/11/09		Memo re: TSCA ARARs review of Pagel's Pit NPL Site, Winnebago Reclamation Landfill, CERCLA Alternatives Array Document	Stephen M. Johnson, USEPA	B. Schorle, USEPA	Memorandum	36
7	90/11/09		Memo re: Toxicity Values (Pagel's Pit/Illinois)	Pei-Fung Hurst, USEPA	B. Schorle, USEPA	Memorandum	37
11	00/00/00		Response to Comments on Proposed NPL Listing			Other	38
84	84/06/11		Revised Scoring Package for Pagel's Pit			Other	39
59	84/07/17		Letter re: Attached booklet including Ecology & Environment's HRS Ranking, Roto Rooter and Warzyn HRS Ranking	C.J. Howard, Winnebago Reclamation Service, Inc.	R. Bartlett, USEPA	Other	40
198	84/12/14		Comments Submitted to the United States Environmental Protection Agency on its Proposed Listing of Pagel's Pit on the Superfund National Priorities List (proposed October 15, 1984))	Winnebago Reclamation Service, Inc.		Other	41

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ROCKFORD, ILLINOIS

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
1	84/06/07		Phone Conversation re: Winnebago Co. Forest Preserve.	Rodney J. Lynn	Mark Keister	Phone Record	42
81	86/08/27		Administrative Order by Consent with attached Statement of Work (effective date October 16, 1986)			Pleadings/Orders	43
4	80/05/27		Potential Hazardous Waste USEPA Site Identification and Preliminary Assessment			Reports/Studies	44
37	80/08/15		Methane Study, Winnebago Reclamation Service, Inc. Pagel Pit Landfill (Cover Letter)	Varzyn Engineering, Inc.	C. Howard, Winnebago Reclam	Reports/Studies	45
13	81/12/00		Geology for Planning in Boone and Winnebago Counties Illinois	Richard C. Berg, John P. Kempton and Amy W. Stecyk Illinois State Geological Survey		Reports/Studies	46
5	83/02/21		Preliminary Assessment	Paul D. Shea, Ecology & Environment	USEPA	Reports/Studies	47
109	83/03/00		Extent of Sources of Groundwater Contamination, Acme Solvents Pagel's Pit Area Near Morristown, Illinois	Ecology & Environment, Inc.	USEPA	Reports/Studies	48
16	83/08/22		Potential Hazardous Waste Site Inspection Report	USEPA		Reports/Studies	49
163	85/03/27		Report Entitled: Supplemental Investigation Winnebago Reclamation Landfill	Varzyn Engineering, Inc.	USEPA	Reports/Studies	50
120	85/06/00		Review of RI/FS Work on the Acme Solvents Site	Eugene A. Hickok and Associates	Acme Technical Committee	Reports/Studies	51
14	86/11/00		QA/QC Data Review - Technical Memorandum	Varzyn Engineering, Inc.		Reports/Studies	52

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19	86/11/00	Technical Memorandum: Receptor/Pathway Analysis Pagel's Pit Landfill	Warzyn Engineering, Inc.	PRP Steering Committee	Reports/Studies	53	
18	87/08/00	Health and Safety Plan, Remedial Investigation and Feasibility Study, Pagel's Pit Landfill	Warzyn Engineering, Inc.	Respondent's Steering Comm.	Reports/Studies	54	
79	87/08/14	Remedial Investigation/ Feasibility Study Work Plan	Warzyn Engineering, Inc.	Respondent's Steering Comm.	Reports/Studies	55	
296	87/12/00	Quality Assurance Project Plan, Remedial Investigation/Feasibility Study	Warzyn Engineering, Inc.	Respondent's Steering Comm.	Reports/Studies	56	
104	88/01/19	Report: Activity 3A.1 Landfill Operation (with cover letter)	Gary Marzorati, Winnebago Reclamation Service, Inc.	J. Hill, Warzyn Eng.	Reports/Studies	57	
24	88/01/30	Quality Assurance Project Plan (QAPP)	Warzyn Engineering, Inc.		Reports/Studies	58	
478	90/03/00	Interim Groundwater Quality Evaluation and Appendices	Warzyn Engineering, Inc.	Respondent's Steering Comm.	Reports/Studies	59	
96	90/09/00	Alternatives Array Document	Warzyn Engineering, Inc.	PRP Group	Reports/Studies	60	
270	91/03/00	Remedial Investigation Report, Winnebago Reclamation Landfill Volume 1 of 2	Warzyn, Inc.	Pagel's Pit PRPs	Reports/Studies	61	
466	91/03/00	Remedial Investigation Report, Winnebago Reclamation Landfill Volume 2 of 2	Warzyn, Inc.	Pagel's Pit PRPs	Reports/Studies	62	
409	91/03/00	Feasibility Study Report, Winnebago Reclamation Landfill	Warzyn, Inc.	Pagel's Pit PRPs	Reports/Studies	63	

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PAGEL'S PIT LANDFILL SITE, ROCKFORD, ILLINOIS
DOCUMENTS LISTED MAY BE FOUND IN THE ACME SOLVENT (AR)
AT THE ROCKFORD PUBLIC LIBRARY, 215 N. WYMAN, ROCKFORD, IL.

DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE
85/02/00	Preliminary Feasibility Study, Technical Report, Acme Solvents Superfund Site	E.C. Jordan Co.	IEPA	Reports/Studies
87/09/00	Final Community Relations Plan, Acme Solvent Site and Pagel's Pit Site	Jacobs Engineering Group, Inc.	USEPA	Reports/Studies
90/02/23	Supplemental Technical Investigation Final Report, Acme Solvents Site	Harding Lawson Associates	USEPA	Reports/Studies
90/08/06	Engineering Evaluation/Cost Analysis Final Report	Harding Lawson Associates	USEPA	Reports/Studies
90/09/20	Remedial Action Alternatives Evaluation Final Report, Acme Solvent Site	Harding Lawson Associates	USEPA	Reports/Studies

GUIDANCE DOCUMENTS INDEX
PAGEL'S PIT LANDFILL SITE
Guidance Documents are available for review at
USEPA Region V-Chicago IL

TITLE	AUTHOR	DATE
Superfund Remedial Design and Remedial Action (RD/RA) Guidance	USEPA	86/06/01
Superfund Federal-Lead Remedial Project Management Handbook	USEPA	86/12/00
Data Quality Objectives for Remedial Response Activities: Example Scenario: RI/FS Activities at a Site with Contaminated Soils and Ground Water (Volume 2)	USEPA	87/03/00
Data Quality Objectives for Remedial Response Activities: Development Process (Volume 1)	USEPA	87/03/00
A Compendium of Superfund Field Operations	USEPA	87/12/01
Community Relations in Superfund: A Handbook (Interim Guidance)	USEPA	88/06/00
Standard Operating Safety Guides	OSHA	88/07/05
CERCLA Compliance with Other Laws Manual, Part I (Interim Final)	USEPA	88/08/00
Guidance for Conducting Remedial Investigations and Feasibility Studies (RI/FS) Under CERCLA	USEPA	88/10/00
Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites	USEPA	88/12/00
Risk Assessment Guidance for Superfund, Volume II: Environmental Evaluation	USEPA	89/03/00

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TITLE	AUTHOR	DATE
Manual		
Applicable or Relevant and Appropriate Requirements (ARARs) Qs & As	USEPA	89/05/00
Control of Air Emissions from Superfund Air Strippers at Superfund Ground Water Sites	USEPA	89/06/15
Guidance on Preparing Superfund Decision Documents: The Proposed Plan, the Record of Decision, Explanation of Significant Differences; The Record of Decision Amendment (Interim Final)	USEPA	89/07/00
Superfund LDR Guide #5: Determining When Land Disposal Restrictions (LDRs) are "Applicable" to CERCLA Response Actions	USEPA	89/07/00
Superfund LDR Guide #4: Complying with the Hammer Restrictions Under Land Disposal Restrictions (LDRs)	USEPA	89/07/00
Superfund LDR Guide #3: Treatment Standards and Minimum Technology Requirements Under Land Disposal Restrictions (LDRs)	USEPA	89/07/00
Superfund LDR Guide #2: Complying with the California List Restrictions Under Land Disposal Restrictions (LDRs)	USEPA	89/07/00

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USEPA Region V-Chicago IL

TITLE	AUTHOR	DATE
Superfund LDR Guide #1: Overview of RCRA Land Disposal Restrictions (LDRs)	USEPA	89/07/00
CERCLA Compliance with Other Laws Manual, Part II: Clean Air Act and other Environmental Statutes and State Requirements	USEPA	89/08/00
Getting Ready: Scoping the RI/FS	USEPA	89/11/00
The Feasibility Study: Development and Screening of Remedial Action Alternatives	USEPA	89/11/00
A Guide to Developing Superfund Records of Decision	USEPA	89/11/00
The Remedial Investigation: Site Characterization and Treatability Studies	USEPA	89/11/00
A Guide to Developing Superfund Proposed Plans	USEPA	89/11/00
Notification of Out-of-State Shipments of Superfund Site Wastes	USEPA	89/11/14
Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part A	USEPA	89/12/00
CERCLA Compliance with Other Laws Manual: CERCLA Compliance with the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA)	USEPA	90/02/00
The Feasibility Study:	USEPA	90/03/00

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TITLE	AUTHOR	DATE
Detailed Analysis of Remedial Action Alternatives		
Guide to Selecting Superfund Remedial Actions	USEPA	90/04/00
Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part A	USEPA	90/04/00
Streamlining the RI/FS for CERCLA Municipal Landfill Sites	USEPA	90/09/00
CERCLA Site Discharges to POTWs: Guidance Manual	USEPA	90/09/00
Basics of Pump and Treat Ground Water Remediation Technology	USEPA	90/09/00

ACRONYM GUIDE for the Administrative Record
Pagel's Pit Landfill Site
Rockford, Illinois

ACRONYM	DEFINITION
AAD	Alternatives Array Document
ARARs	Applicable or Relevant and Appropriate Standards, Limitations, Criteria and Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
HRS	Hazardous Ranking Score
IEPA	Illinois Environmental Protection Agency
LDR	Land Disposal Restriction
NPL	National Priority List
POTW	Publicly Owned Treatment Works
PRP	Potentially Responsible Party
QA/QC	Quality Control/Quality Assurance
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RSSI	Raltech Scientific Services, Inc.
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency

ADMINISTRATIVE RECORD INDEX, UPDATE #1
PAGEL'S PIT SITE
ROCKFORD, ILLINOIS

FILE NAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	1	91/04/02	Letter re: IEPA expresses no objection in the final draft proposed plan	Paul E. Takacs, IEPA	B. Schorle, USEPA	Correspondence	1
	3	91/04/20	Letter re: Comments on the Proposed Plan (with attached newspaper clippings)	James Lightcap	B. Schorle, USEPA	Correspondence	2
	2	91/05/09	Letter re: Acme Solvent Site PRPs Comments on the Proposed Plan for the Pagel's Pit Superfund Site	Ben Costello, Applied Hydrology Associates, Inc.	B. Schorle, USEPA	Correspondence	3
	2	91/05/13	Letter re: Comments on EPA Proposed Plan for Pagel's Pit Superfund Site	Betty Johnson, League of Women's Voters of Rockford	USEPA	Correspondence	4
	28	91/06/03	Letter re: Criticism of EPA's use of worst-case assumptions in calculating future health risk at site (Enclosed OSWER Directive 9285.6-03 - Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors", March 25, 1991)	Ridgway M. Hall, Jr. and Susan R. Koehn, Crowell & Moring	B. Schorle, USEPA	Correspondence	5
	12	91/04/00	Fact Sheet: Proposed Plan for the Pagel's Pit Superfund Site	USEPA		Fact Sheets	6
	40	91/05/01	Transcript of Public Meeting held on April 25, 1991	USEPA		Meeting Notes	7
	1	91/04/22	Memo re: Containment-Only Consultation	Sally Mansbach, USEPA	D. Ullrich, USEPA	Memorandum	8
	3	91/06/11	Memo re: Pagel's Pit, Winnebago County, Illinois	Erin Moran, USEPA	B. Schorle, USEPA	Memorandum	9

ADMINISTRATIVE RECORD INDEX, UPDATE #1
PAGEL'S PIT SITE
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FILE#	FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
				Risk Assessment Review				
	5		89/01/13	Preliminary Health Assessment	Office of Health Assessment, Agency for Toxic Substances and Disease Registry (ATSDR)		Reports/Studies	10
	94		90/12/31	Declaration for the Record of Decision and Record of Decision Summary, Acme Solvent Reclaiming, Inc.	USEPA		Reports/Studies	11
	18		91/04/00	Proposed Plan	USEPA and IEPA		Reports/Studies	12
	53		91/05/15	Report Entitled: Comments by Pagel's Pit Landfill Participating PRPs in Response to EPA's Proposed Plan for the Winnebago Reclamation Landfill Superfund Site (with cover letter attached)	The Pagel's Pit Landfill Participating PRPs	B.Schorle, USEPA	Reports/Studies	13

ACRONYM GUIDE for the Administrative Record
Pagel's Pit, Update #1
Rockford, Illinois

ACRONYM

DEFINITION

IEPA

Illinois Environmental
Protection Agency

USEPA

United States
Environmental Protection
Agency

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

PAGEL'S PIT
ROCKFORD, ILLINOIS

ADDENDUM TO THE ADMINISTRATIVE RECORD
FEBRUARY 8, 1999

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	06/28/91	Adamkus, V., U.S. EPA		Record of Decision	73

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
PAGEL'S PIT LANDFILL SITE
(WINNEBAGO RECLAMATION LANDFILL)
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

UPDATE #2
AUGUST 11, 1999

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	02/12/93	U.S. District Court/Northern District of Illinois	Parties to the Consent Decree	Consent Decree re: Pagel's Pit Superfund Site	224
2	09/00/93	Warzyn Inc.	U.S. EPA	Groundwater Remedial Design Work Plan for the Winnebago Reclamation Landfill (Pagel's Pit) Site	67
3	09/00/93	Warzyn Inc.	U.S. EPA	Remedial Design/ Remedial Action Work Plan for the Winnebago Reclamation Landfill (Pagel's Pit) Site	46
4	07/00/94	Warzyn Inc.	U.S. EPA	Pumping Test Plan for the Winnebago Reclamation Landfill Site	30
5	06/00/95	GeoTrans, Inc.	U.S. EPA	Groundwater Remedial Alternative Analysis and Preliminary Design (Air Sparging) for the Winnebago Reclamation Landfill Site	128
6	07/00/95	GeoTrans, Inc.	U.S. EPA	Report: Construction and Calibration of a Three-Dimensional Numerical Groundwater Flow Model for the Winnebago Reclamation Landfill Site	100
7	07/00/95	GeoTrans, Inc.	U.S. EPA	Groundwater Impact Assessment Report at the Existing Facility: Volume 1 - Report for the Winnebago Reclamation Landfill Site	104
8	07/00/95	GeoTrans, Inc.	U.S. EPA	Groundwater Management Zone Application for the Winnebago Reclamation Landfill Site	343

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9	07/00/95	GeoTrans, Inc.	U.S. EPA	Groundwater Monitoring Plan: Volume 1 - Report for the Winnebago Recla- mation Landfill Site	67
10	07/00/95	GeoTrans, Inc.	U.S. EPA	Groundwater Monitoring Plan: Volume 2 - Appen- dices for the Winnebago Reclamation Landfill Site	511
11	11/00/95	GeoTrans, Inc.	U.S. EPA	Corrective Action Measures Assessment and Preliminary Design for the Pagel Landfill Site	144
12	05/00/96	Andrews Environmental Engineering, Inc.	U.S. EPA	Application for Signifi- cant Modification to Permit for an Existing Unit for the Pagel Land- fill Facility: Volume I of II (Text and Attach- ments 1-12)	375
13	05/00/96	Andrews Environmental Engineering, Inc.	U.S. EPA	Application for Signifi- cant Modification to Permit for an Existing Unit for the Pagel Land- fill Facility: Volume II of II (Attachments 13-25)	467
14	08/22/96	Bakowski, E., Illinois EPA	Marzorati, G., Winnebago Reclamation Service	Letter re: Granting of Permit to WRS Approving Modification of an Existing Municipal and Non-Hazardous Special Waste Landfill for the Pagel's Pit Site	49
15	11/00/96	GeoTrans, Inc.	U.S. EPA	Groundwater Remediation Project Technical Specifications for the Pagel Landfill Site	82
16	01/14/97	Burnell, D., HSI GeoTrans	Bakowski, E., Illinois EPA	General Application for Permit: Compliance with August 22, 1996 Permit Requirements for the Winnebago Reclamation Landfill Site	53

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17	05/08/97	Burnell, D., HSI GeoTrans	Bakowski, E., Illinois EPA	General Application for Permit: Groundwater Monitoring to Evaluate Effectiveness of Source Reduction and Natural Attenuation Remedial Measures for the Winnebago Reclamation Landfill Site	142
18	06/03/97	U.S. EPA	File	Winnebago Leachate Compound List: GCMS Volatile Analysis for the Winnebago Reclama- tion Landfill Site	9
19	02/00/98	EMCON	U.S. EPA	Construction Quality Assurance Acceptance Report: Pagel Landfill Final Cover Construc- tion, Western Portion	672
20	05/20/98	American Environmental Network	Winnebago Reclamation	Analytical Results for the Winnebago Reclamation Landfill Site	10
21	05/27/99	En Chem, Inc.	Winnebago Reclamation	Analytical Report for the Winnebago Reclamation Landfill Site	40
22	07/00/99	HSI GeoTrans	U.S. EPA	Groundwater Summary Report to Evaluate Effectiveness of Source Reduction and Natural Attenuation Remedial Measures: Volume 1 - Report (DRAFT) for the Winnebago Reclamation Landfill Site	206
23	07/00/99	HSI GeoTrans	U.S. EPA	Groundwater Summary Report to Evaluate Effectiveness of Source Reduction and Natural Attenuation Remedial Measures: Volume 2 - Time Series Plots (DRAFT) for the Winnebago Recla- mation Landfill Site	667

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
PAGEL'S PIT LANDFILL SITE
(WINNEBAGO RECLAMATION LANDFILL)
ROCKFORD, WINNEBAGO COUNTY, ILLINOIS

UPDATE #3
SEPTEMBER 30, 1999

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	01/00/93	Warzyn, Inc.	U.S. EPA	Phase I and IA Investigation Report: Southeast Corner Operable Unit at the Winnebago Reclamation Landfill (Pagel's Pit) Site [Revised]	120
2	07/00/94	Warzyn, Inc.	U.S. EPA	Groundwater Impact Assessment Report for the Winnebago Reclamation Landfill (Pagel's Pit) Site	305
3	08/00/99	U.S. EPA	Public	Proposed Plan for Operable Unit 2 Remedy and Main Groundwater Remedy Modification at the Pagel's Pit (Winnebago Reclamation Landfill) Site	13
4	09/00/99	Concerned Citizens	U.S. EPA	Five Public Comment Sheets/Letters re: Citizens' Comments on the Proposed Cleanup Plan for the Pagel's Pit Site	11
5	09/01/99	Wengow, R., Illinois EPA	Lichty, J., Pagel Landfill	Letter Forwarding Attached Analytical Results for Private Wells Sampled by the Illinois EPA	16
6	09/08/99	Maichle, J. & R. Roth; Winnebago County Department of Public Health	Blum, G., U.S. EPA	Letter re: Winnebago County Department of Public Health's Comments on the Proposed Cleanup for Operable Unit #2 and Operable Unit #1 at the Pagel's Pit Site	4

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
7	09/13/99	Holmstrom, J., Winnebago Reclamation Service, Inc.	Schorle, B. & G. Blum; U.S. EPA	Letter re: Winnebago Reclamation's Comments on the Proposed Plan for the Operable Unit #2 Remedy and Main Ground- water Remedy Modification for the Pagel's Pit (Winnebago Reclamation Landfill) Site	5
8	08/25/99	Diane Hromek's Court Reporters, Inc.	U.S. EPA	Transcript of August 25, 1999 Public Hearing re: the Pagel's Pit Site w/ Attached Tetra Tech EM Cover Letter	33

Appendix B

Responsiveness Summary Pagel's Pit Site Winnebago County, Illinois

I. Overview

In August 1999 the United States Environmental Protection agency (USEPA) released to the public the Pagel's Pit site (Site) Proposed Plan which proposed a remedy for Operable Unit (OU) 2 and a change in the remedy for OU 1. The public was given notice that the comment period would be open for 30 days, from August 13, 1999 through September 11, 1999, and that there would be a public meeting on August 25, 1999. The public was also given notice that the Administrative Record, which contains documents concerning the site, was available in the repository and in USEPA's Region V office. A fact sheet version of the Proposed Plan, which summarized the Proposed Plan, was mailed to those on the established mailing list. The Proposed Plan was placed in the repository and was mailed to some thought to be most affected by the proposed remedy. This notice was published in the *Rockford Register Star* on August 13, 1999. This approximately one-quarter page notice was in the first section of the paper, reportedly on page 8, across from the editorial page.

At the August 25, 1999 public meeting representatives of USEPA discussed the proposed alternative for OU 2 and the proposed change in the remedy for OU 1, answered questions about the site and the problems there, and received verbal comments. An official transcript of the meeting was made and has been made a part of the Administrative Record. At the request of some who were at the August 25, 1999 public meeting, a second meeting was held September 8, 1999 to further discuss the Proposed Plan. No transcript was made of this meeting and only written comments were accepted. All written comments that were submitted are also part of the Administrative Record.

Two operable units have been designated for the site. OU 1 consists of the wastes, soils, and groundwater at the site and any other areas, including groundwater, off the landfill property where contamination may have come to be located, except for the groundwater in the southeast corner of the landfill property, south of the waste disposal area, which is OU 2. The remedy for OU 1 was presented in a Record of Decision issued on June 28, 1991 (1991 ROD).

A number of people who commented on the Proposed Plan and the associated documents did object to the replacement of the barrier well system (pump-and-treat system) at the downgradient end of the waste disposal area with monitored natural attenuation that includes a contingency for part of OU 1. The concern was that contaminated groundwater is present west of the original landfill

property line, and that it may continue to move west and threaten water supply wells. The wells of greatest concern were those in a primarily new subdivision northwest of the Site. USEPA believes that the contaminated groundwater at the western end of the landfill is not a threat to these wells to the northwest or any other wells to the west at this time and does not believe it will become a threat. The proposed and selected remedy for the change for OU 1 does include sampling of monitoring wells so that the location of the plume is known. The Illinois Department of Public Health has offered to sample and analyze some of the private water supply wells in the area in order to provide the residents with information about their water. The landfill operator has also said that it will sample private wells that lie in the general direction that the groundwater is moving.

II. Background on Community Involvement

The residents on Lindenwood Road near the site have expressed concern about this site and the Acme Solvent site, which is east of the Pagel's Pit site and a source of groundwater contamination, since at least 1981. Groundwater in the area of the two sites generally flows toward the west, and somewhat southwest at the Acme Solvent site, so that wells of some of these residents became contaminated. This has been addressed by some of the potentially responsible parties (PRPs) for the Acme Solvent site who have provided an alternate water supply to several of the homes. Previously, home carbon treatment units were furnished for some of these residences. Some of the homes have been purchased by the landfill operator.

In the past, the site has generally not caused much concern to people who are not immediate neighbors. News about the site is published, but the attention that is paid to it does not appear to be any greater than one would expect.

The August and September 1999 public meetings were each attended by about 40 to 50 people. Many of the attendees were not immediate neighbors of the landfill, either along Lindenwood Road, along which the landfill lies, or Baxter Road, north of the landfill, or in the Living Woods subdivision to the northwest. Some of the people were there because of their opposition to the land application of sludge by a company owned by the same entity that owns the landfill operator. Some individuals were concerned because of another landfill southwest of the Pagel's Pit site, that is not related to this site, and because of a proposed prison in the area. Questioning generally dealt with the groundwater contamination, the landfill gas, the landfill being constructed to the south of the present landfill, the continued operation of the Pagel's Pit site as a landfill until it reaches capacity, the landfill southwest of the Site in the next county, and the land application of sludge. These latter two subjects have nothing to do with the proposed remedies for the two operable units.

III. Summaries of Comments Received and USEPA's Responses

The comments received during the comment period are summarized here and USEPA's responses are presented. For those not familiar with the landfill, it is presently operated by Winnebago Reclamation Service, Inc. This is a William Charles company. Another William Charles company is Rockford Blacktop Construction Co., which is mentioned in some of the comments.

In the Proposed Plan, the proposed remedy for OU 2 was designated as "no action". At that time it was thought that deed restrictions preventing the use of groundwater in the southeast corner were already in place. Since that time it has been discovered that no restrictions were placed on the southeast corner following the entry of the Consent Decree in 1993, because the southeast corner had been excluded from the work specified in that Consent Decree. Therefore, in this 1999 ROD, the remedy selected for the southeast corner is designated as "institutional controls". This remedy is the same as the no-action alternative of the Proposed Plan since the outcome is the same: a restriction on use of the groundwater, no active remediation of the groundwater, and continued monitoring of the groundwater.

A. Comments Presented at the August 1999 Public Meeting

1. Comment. John Ekberg made four points. 1) He wants the landfill capped as soon as possible, with a membrane in the cover. 2) He wants more money for monitoring and money for VOC (volatile organic compound) testing for people that live around the site. 3) He wants the pump-and-treat system to be used now. 4) He wants all of the work to be paid for by Rockford Blacktop.

USEPA Response. The 1991 ROD for OU 1 included capping the landfill with the cover that would meet the requirements of the State of Illinois, and it did not require the landfill to close early. This and other aspects of the remedy are not being addressed at this time; the only part of OU 1 being addressed at this time is the groundwater. USEPA still believes that early closure of the landfill is not necessary. The final cover that has been placed on about one-third of the landfill so far does include a membrane, and it is expected that the cover for the rest of the landfill will include a membrane. However, the requirement is that the cover satisfy the requirements of the State.

The landfill operator will conduct the monitoring that is needed to meet USEPA and State requirements. This will include monitoring of residential wells in areas that are downgradient from the landfill and are close enough to possibly be affected by the landfill, based on what is known about the plume. The Illinois Department of Public Health has offered to test some of the wells in the area, and several people have responded to this offer.

USEPA has decided to select monitored natural attenuation with an active contingency remedy to replace the barrier well (pump-and-treat) system specified in the 1991 ROD. This change has been made for the reasons given in this ROD.

The remedial work for OU 1 for the Site is to be paid for in the manner set out in the 1993 Consent Decree between USEPA and the landfill operator and some other potentially responsible parties (PRPs).

2. Comment. Jake Henry compared the landfill to the dumping of the sludge (probably he was referring to the land application of sludge), and that if there is a problem the company wants a change. He said that USEPA is not protecting the environment as it should and that USEPA is allowing a disruption of the natural environment and it should be stopped immediately.

USEPA Response. USEPA has determined that the selected remedies for both operable units are protective of human health and the environment, comply with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and are cost-effective. The monitored natural attenuation was selected with the expectation that the downgradient groundwater will be returned to beneficial use, at which time the disruption of the natural environment will have been eliminated.

3. Comment. Frank Wysocki expressed a concern about who will operate the leachate extraction if the landfill's operator fails to do so. He wanted to know what type of assurance there was that the operation will continue to be run and will not have to be taken over by the taxpayers.

USEPA Response. The 1993 Consent Decree specifies the financial assurances that have to be provided so that the remedial work of OU 1 will be done. Presently there is a letter of credit and a trust fund to provide this financial assurance. The landfill operator also must provide financial assurance for the State under its operating permit.

It should also be mentioned that, with the type of cover system that is required, eventually the amount of leachate that will need to be removed from the landfill will be minimal since the cover will reduce the infiltration to a minimal amount. This will limit the financial burden of long-term operations even in the unlikely event that all other assurances are inadequate.

4. Comment. David Brown, who stated that he lives west of the Site, objected to the expansion of the landfill and claimed that leachate was coming out of the Site. He is concerned that the new landfill will also leak in the future.

USEPA Response. The "expansion" of the landfill referred to here is the new landfill unit being constructed. This is handled by

the Illinois Environmental Protection Agency (Illinois EPA). Illinois EPA should be contacted regarding any concerns there are about the new landfill unit. This base of this unit is separate from the base of the present unit (north unit), and is constructed differently. The new unit should have no effect on the protectiveness of the remedies for OU 1 and OU 2 of the north unit.

There should be no leachate leaving the Site, and USEPA is unaware of any leachate seeps that lead to leachate leaving the site. To have leachate seep from the sides of the landfill periodically, especially when there is only daily or intermediate cover on that part of the landfill, is not unexpected and not unusual. When this happens, the landfill operator is required to repair the seep before leachate can leave the site.

5. Comment. Frank Manzullo said that what he believes is bothering his neighbors is the concentration of things in the area, the two landfills, the sludge (application), a new landfill nearby, the Acme Solvent site, and possibly now a prison. He asked if the USEPA has the power to shut down the landfill forever. He says that the growth in the (Rockford) area is to the north, and maybe a new landfill should go up there.

USEPA Response. Locating solid waste landfills is a local and state matter in Illinois. USEPA is not a part of the process for this. With regard to trying to shut down the Pagel's Pit landfill, USEPA does not believe that this is necessary or appropriate as long as OU 1 and OU 2 remedies are fully implemented.

6. Comment. Tom Maxwell mentioned that the liner for the new landfill is being placed below the water table, and he believes the water will go back into the landfill. He said that the site should have been looked at before digging began.

USEPA Response. Construction of the new landfill is not related to the selection of a remedy for the old landfill. The construction of the new landfill is a state issue, and anyone with concerns about that should contact the Illinois EPA, Division of Land Pollution Control.

7. Comment. August Borchardt, who said that he lives west of the Site, stated that his well passed tests five years ago when his house was bought, but now it does not pass. The house to the east of him, between his house and the landfill, needed a purification system installed before it could be sold. The house across the street had a new well installed last year which did not pass inspection.

USEPA Response. Since Mr. Borchardt did not provide USEPA with specific tests the wells have not been passing, it is difficult to assess this comment. USEPA is unaware of any private wells west of the Site having been affected by the Site. Reportedly, Mr. Borchardt lives in an area considerably west of the landfill

(probably over 2 miles from the landfill), and the plume from the landfill has not affected that area.

8. Comment. Dean Ekberg operates the Ekberg Material Quarry, which is northeast of Pagel's Pit and north of the Acme Solvent site. He said that he is trained in environmental engineering and geological engineering. He claimed the original intent at Pagel's Pit was to go to the original contour, and now it is way past that, it is one of the highest points in the county. He is appalled that the landfill was allowed to have only 2 inches of asphalt as a liner; in his education in the 1970s he had never heard of 2 inches of asphalt as a liner. He claimed that USEPA agrees to let these unheard of things happen. He said that the 1991 remedy said ". . .to stop this dump, you know, stop what you are doing, get it cleaned up, pump-and-treat." Yet eight years later the company is still putting wastes into the landfill, which is a Superfund site, making \$100 to \$200 million a year, and he has never heard of this either. When one has a Superfund site, one needs to solve the problem. He claimed the landfill is leaking extensively, has continued to pollute for eight years, is affecting Killbuck Creek, the sand and gravel, and probably the fractured dolomite to the west. It is affecting wells to the west, and he referred to the previous commenter. Therefore USEPA should require the landfill to be closed and start the pump-and-treat system. He mentioned the leachate seeps from the landfill, and that there are ravines cutting into the landfill, which are cutting through the intermediate vinyl cover. He described a fire that happened at the landfill 2 years ago. He said that when there is somebody with deep pockets that party gets their way. He referred to putting a landfill in a known floodplain, apparently referring to the Pagel's Pit landfill. He said that the operator has an irresponsible record.

USEPA Response. The landfill height and the liner are matters covered by the landfill's permits. Back in the early 1970s landfill construction techniques were considerably different than they are today.

The 1991 remedy did not call for closing the landfill before it reached its capacity. USEPA did not believe then, and it does not believe now, that closing the landfill early is necessary. The barrier well (pump-and-treat) system has been investigated and with this remedy change it has been decided that it is best to change to a monitored natural attenuation approach and only change to an active system for addressing the groundwater if it becomes necessary. Winnebago Reclamation does not need to close its landfill to protect human health and the environment at this Superfund site.

It is unlikely that the landfill is leaking extensively since a head of leachate builds up in the landfill. Sampling of Killbuck Creek has never shown that the landfill has a significant effect on the creek. There is contamination in the groundwater down-

gradient of the landfill. This is being monitored, both in the sand-and-gravel aquifer and in the bedrock below it, and will continue to be monitored. As stated in the response to the previous commenter, USEPA is unaware of any private wells west of the Site having been affected by the Site.

Leachate seeps and erosion of the landfill cover are items that the landfill operator is required to address under the permit. An erosion gully exposing wastes means that the wastes are not properly covered. There is no "intermediate vinyl cover" on the landfill, so ravines have not cut through a vinyl cover. A landfill cannot be located in a floodplain or floodway unless compensation for it is provided. ("The facility shall not restrict the flow of a 100-year flood, result in washout of solid waste from the 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain, unless measures are undertaken to provide alternative storage capacity such as lagoons, holding tanks, or provision of drainage around structures at the facility." (35 IAC 811.102(b))) USEPA is unaware of any violations of state law regarding these requirements.

USEPA is also unaware of the landfill operator having an irresponsible record. Reportedly, since late 1992 there have been no citations of the landfill by the State for the condition or operation of the landfill as the result of about 20 surprise inspections.

9. Comment. Mrs. Winquist, who says she has to "look at that mountain every day", urges the closing of the landfill.

USEPA Response. As stated above, USEPA does not believe that it is necessary to close the landfill.

10. Comment. Art Johnson, President of Winnebago County, stated that he would like USEPA to initiate a study to see what would happen to the groundwater flow if the prison is built about a mile away. The prison would pump tens of thousands of gallons of water from a deep well. He wanted to know if it would be irresponsible of the County to pursue this because of this withdrawal and the contamination in the groundwater in the area.

USEPA Response. The location of the prison is upgradient of the Pagel's Pit site and the Acme Solvent site (actually somewhat north of being upgradient), with regard to the upper aquifer. The Acme Solvent site is closer to the prison than the Pagel's Pit site. The effect that one or more deep wells installed at the prison might have on the aquifer that the wells are located in could be determined prior to siting the prison. It is not usual for the USEPA Superfund program to study the effect of a proposed withdrawal on groundwater flow. The deep aquifer at that location is not now contaminated by either site. USEPA cannot comment at this time on whether or not it would be irresponsible to pursue the siting of the prison at the proposed

location.

11. Comment. Darius Trosper, who lives west of US 251 along the creek, mentioned a fish kill that happened several years ago. He contacted Illinois EPA and, he said, was told by someone from that agency that they could not tell him anything. He was told to keep his animals away from the creek.

USEPA Response. USEPA Superfund is not aware of any fish kill in Killbuck Creek in the area of the landfill or downstream from there. USEPA and/or the State would act on such information to ensure that the landfill is not causing such impacts. It is possible that at the time Mr. Trosper talked with the Illinois EPA representative that person had not learned anything about the fish kill and so did not have anything to tell him. Mr. Trosper might try contacting Illinois EPA now to find out what they learned about that fish kill.

12. Comment. Mr. Ekberg (which Mr. Ekberg this is is not specified in the transcript, but USEPA believes that this is Dean Ekberg) stated that there were fines leveled against the landfill operator that were kept quiet in the media. He claims that leachate was supposedly pumped into the creek from the west side; there have been fish kills and livestock getting sick. He asked what kinds of fines have been imposed on the landfill operator, and where can people find out about any fines. He also said that he wants another public meeting. He claimed that the public notice for the August meeting was buried on page 8 and the public did not have time to prepare for this meeting. He wanted the additional meeting for public input.

USEPA Response. As stated above, USEPA is unaware of any citations against the landfill as the result of inspections for the condition or operation of the landfill, so there were probably no fines related to the condition or operation of the landfill. If more information about this is desired, one can contact the Illinois EPA, Division of Land Pollution Control.

There have been no reports to the USEPA Superfund program of leachate being pumped into the creek, and as stated above, also no reports about fish kills or livestock getting sick. The landfill is not the only entity bordering Killbuck Creek. USEPA, of course, would follow up on any specific information about impacts on the creek or users of the creek.

As a result of Mr. Ekberg's request, another public meeting was held, on September 8, 1999, in New Milford. However, a transcript was not kept of this meeting; USEPA's purpose for having the meeting, since it was requested, was to exchange information with those attending and to allow for people who could not attend the first meeting to find out more about the Proposed Plan. Although oral comments were not accepted at the September meeting, written comments were accepted.

13. Comment. Mr. Henry asked why the notice for the August meeting was buried back in the paper. He also mentioned that he knew of a possible facility for another meeting.

USEPA Response. USEPA does not consider an advertisement covering over a quarter of the page and located on page 8 as being buried back in the paper. Placing an advertisement in a local newspaper of large circulation and mailing notices to those on the mailing list is the normal method USEPA uses to inform the public about public meetings.

14. Comment. Frank Wysocki mentioned that USEPA has approved a landfill in Ogle County that is adjacent to the floodplain. It is planned to accept garbage from Chicago, or this is already being done. He wanted to know if the water table is getting "too risky" here.

USEPA Response. First of all, the landfill in Ogle County, assuming it is a solid waste landfill, would not be and has not been addressed by USEPA with regard to its permit. The State permits the construction and operation of solid waste landfills. State regulations include location standards which address locating landfills near water bodies.

It is not expected that there will ever be any mingling of plumes of contamination from the two landfills, so they have to be considered separately.

B. Written Comments

1. Comment. From J. Maichle Bacon, Public Health Administrator, and Ruth Roth, Groundwater Protection Coordinator, Department of Public Health, Winnebago County, Rockford, Illinois. The intention of their letter is to register comments and questions of the Department after having reviewed the August 1999 fact sheet that summarized the Proposed Plan.

Regarding OU 2, they mention that there is some concern on the part of the Department that there may be localized groundwater flow components moving in a 360 degree direction away from the landfill, probably because of groundwater mounding underneath the landfill. In the early 1980s a gas problem was identified east of Lindenwood Road affecting at least two neighboring homes with both landfill gas and a reduced groundwater pH associated with the gas. Localized groundwater flow may be doing the same thing. They state that the proposed "no action" alternative for the southeast corner leaves too many unknowns regarding the possibility of contaminants from the landfill migrating upgradient for short distances. They suggest installing shallow piezometers immediately upgradient of the Site on the near eastern side of Lindenwood Road.

Regarding the proposed remedy change for OU 1, they ask if the

hydrogeology of the area downgradient has been adequately characterized to predict with reasonable accuracy that there will not be contaminant migration beyond the property owned by the landfill operator. Also, does the Kishwaukee and/or the Rock River represent potential long-range discharge points for any of the contaminants? If flow-path potential extends that far, many private wells may be influenced. The fact sheet did not provide enough discussion to answer these concerns.

They also commented on the proposed low-flow sampling procedure for groundwater sampling. The concern is that the sample may be from the well casing rather than from the aquifer. They suggest that, when sampling, that the draw-down be monitored during the purging process. When the water level has stabilized, sampling could commence.

USEPA Response. There is still evidence from the water elevations reported in the draft July 1999 Groundwater Summary Report, which is part of the Administrative Record, that there is flow away from the landfill in the southeast corner. Most likely this is due to groundwater mounding at the landfill, and this may very well exist along the eastern boundary of the waste disposal area near Lindenwood Road. Monitoring wells in that area that were sampled during the remedial investigation did show the possibility of some increases in chloride ion concentrations. The small amounts of organics that were present in these wells may have come from either Pagel's Pit or the Acme Solvent site. Mounding at the landfill will not cause flow in other directions for any great distance. It is because of this mounding that the source control of the landfill through capping and the leachate level minimization was mentioned with regard to the selection of the institutional controls alternative for the southeast corner. Monitoring will be continued in this area, and the mounding there will be followed. Sampling or water level measurements on the east side of Lindenwood Road will be considered. Landfill gas is required to be controlled both by the remedy specified in the 1991 ROD and by the Illinois solid waste landfill regulations. Gas extraction has been done at the landfill since the early or mid 1980s because of what was found in the early 1980s, which the commenters have mentioned.

There has been some modeling done of the groundwater in the vicinity of the Pagel's Pit site. However, the extent of the plume to the west will be mainly followed by sampling the monitoring wells. It may be necessary to install additional monitoring wells further west of the present wells. Also, if an applicable groundwater quality standard is consistently exceeded beyond the groundwater management zone, consideration will have to be given to an active method for addressing the contaminated groundwater. Therefore, the contaminated groundwater toward the west will not be extending further. Thus the Kishwaukee and/or the Rock River are not threatened by contamination moving through the groundwater.

The landfill operator has obtained permission from the State to use the low-flow sampling procedure for the monitoring wells. However, this procedure has not yet been used, and no decision has been made to use it. If it is used, the comments above will be considered in developing the procedures to be used.

2. Comment. From Cindy and Steve Bunk. They believe that Rockford Blacktop should have to pay for the cleanup of the Site, and that the remedy that was set many years ago should be used. Saying it is too costly to purify the groundwater is absurd considering the profits gained by Rockford Blacktop. All parties were aware of the site conditions before the first load of garbage was hauled to the site. They agree that the original remedy is going to be a huge undertaking but they are not sympathetic to costs, equipment, or time needed. Variances from the original remedy selection only leave the residents with the eventual cleanup with extremely high costs looming. The Site was contaminated by customers paying Rockford Blacktop for the use of their landfill site, and therefore Rockford Blacktop is now responsible for the cleanup of the Site.

USEPA Response. The selected remedy change for OU 1 is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. USEPA believes that the selected remedy of monitored natural attenuation with an active contingent remedy, for OU 1, is the appropriate remedy for the groundwater of OU 1. One of the criteria that USEPA must use in the selection of a remedy is cost-effectiveness, and USEPA believes that this remedy change is appropriate because it is more cost-effective while still being protective.

3. Comment. From Susan Allen. A resident of the area periodically since 1965, she is disappointed that the landfill has not been closed. She at one time lived in a house directly north of the landfill on Lindenwood Road. She says that her well was supposedly tested monthly at the time, with negative results. Later she was contacted by the National Registry for Exposure because the family had been exposed to trichloroethene through the well water. She was pregnant when the exposure began, and her daughter was 3 years old when they moved away. She agrees that the Site needs to be cleaned up, and does not have any ideas on how to proceed, but expanding the landfill to the south is not a solution. She believes that there have been deceptive practices over the years. The height of the landfill should not be higher than the surrounding terrain, the odor is bad, there is trash in her yard from the trucks driving by, Lindenwood Road is always a mess, particularly on windy days, the water is contaminated, it is unpleasant following a truck hauling sludge due to the odor. There was not to be a quarry or stone excavating operation on the land her former in-laws and spouse sold (north of the landfill), and there is now. She believes that Pagel's Pit should be closed

and the residents of Rockford should pay a higher fee to have their trash hauled to the landfill in Ogle County. She believes that that operation is much safer and cleaner and is a state-of-the-art reclamation site.

USEPA Response. USEPA does not believe that the conditions are such that under the Superfund program Pagel's Pit needs to be closed. USEPA encourages you to contact Illinois EPA about any issues which relate to the operation of the landfill. USEPA is not a party to the siting of a new landfill to the south of the present one, or to the decisions that were made to allow the present one to reach its present height; the State addresses these issues.

4. Comment. From Mark Larson. He opposes "no action" for OU 2 (however the remainder of his note indicates that he probably means OU 1). Since 1991 USEPA and Pagel's Pit have known that a groundwater pump-and-treat system was and is the best practice for handling the contamination, but due to costs USEPA and Pagel's Pit have chosen the alternative of wait-and-see. He believes that this is criminal to both the people and the land. Pagel's Pit should be a case study in how not to operate a site and where sites should not be located (floodplain and streams). If USEPA does not believe it should be shut down, at least more testing should be done, at both the Site and at the nearby homes and streams.

USEPA Response. USEPA believes that the selected monitored natural attenuation with a contingency as a change in the remedy for OU 1 is appropriate. USEPA selects the remedy, not a potentially responsible party. Monitoring of the groundwater has been going on and will continue to be done. USEPA encourages interested parties to contact us with specific suggestions for monitoring. The Illinois Department of Public Health has offered to sample the wells of some nearby residences, and the landfill has also offered to do so, as mentioned above.

5. Comment. From Frank Manzullo. He says that many feel that there is too much uncertainty in and around Pagel's Pit. His brother, who is the U.S. Congressman, has now taken an interest and wants to know more. If one person should get ill or some disease occurs, there will be a class action suit, and USEPA would be accountable. He hopes it is true that all the problems at the Site are being addressed.

USEPA Response. As in many matters dealing with the environment, there is some uncertainty. USEPA is required to balance this uncertainty against all other factors in selecting a remedy. That is why monitoring must continue. USEPA does believe that the selected remedies are protective.

6. Comment. From Dean Ekberg, co-owner of Ekberg Material Inc., a quarry northeast of the Pagel's Pit site, holder of a M.S. in

geological engineering and a B.S. in geology, and experienced in underground fluid flow. He says that USEPA's proposal to go from a pit closure and pollution treatment to a no action or monitored natural attenuation is appalling. The 1991 ROD ordered closure and treatment and said that a failure to implement this order would cause imminent and substantial endangerment to public health. Why would USEPA reverse the 1991 decision and knowingly endanger the public?

He complained about the public notification concerning the first public meeting was stuck at the back of the local section of the paper. He said that none of the concerned residents around or west of the landfill were notified by mail like they were supposed to be. The second public meeting (in September) had no public notice in the paper and the mailing arrived after the meeting.

He said that in the proposal USEPA never shows exactly where OU 2 and OU 1 are so that it can be seen what USEPA is proposing not to do. He said that USEPA has whited-out, on the little map included with the Proposed Plan fact sheet, all the monitoring wells to the south where USEPA has given the operator permission to build another dump. He said that in the public meeting for OU 1 in 1991, USEPA said that no action would be a step backward.

He said that the 1991 ROD papers showed significant enough amounts of arsenic, cadmium, and bisphthalate as well as solvents and ammonia to close Pagel's Pit and treat it, that imminent and substantial endangerment of the public would result if that was not done immediately. He asks why Rockford Blacktop was allowed to keep right on dumping for the last 8 years and make an estimated 100 million dollars per year in dumping fees, according to unofficial estimates.

He mentions the USEPA position that it is not cost-effective to implement the barrier well system. He then claims that this is saying that it is not cost-effective to protect innocent victims downstream and downgradient from the landfill.

He mentions purported fish kills downstream in Killbuck Creek, the leachate springs around the base of the landfill. He mentions "dumping of contaminated leachate south of Pagel during current pumpoff operations at the new landfill to the south". He mentions the dumping of cyanide waste in the landfill from the Parson's Casket Superfund site. He feels the biggest travesty is the well monitoring. Virtually all the monitoring wells west of the landfill are improperly constructed. Most were drilled too shallow. And the operator does its own monitoring.

He closes with the request that the no action proposed alternative be thrown out and that Pagel's Pit be closed for good.

USEPA Response. Dean Ekberg commented at the August public meet-

ing (see comments 8 and 12 in part A). Responses for some of his comments that were repeated there will not be repeated.

First of all the 1991 ROD did not call for closure of Pagel's Pit. The 1991 ROD did not mention ammonia, which is understandable since ammonia was not one of the parameters analyzed for in the remedial investigation.

In changing some of the 1991 remedy (note that this is not a reversal of the 1991 remedy and it is not "no action" either for the groundwater of OU 1 or for the landfill itself, where the remedy for proper closure is still required), USEPA does not believe it is endangering the public. USEPA believes that the remedy and remedy change selected are protective.

The notification in the paper for the August public meeting is discussed above. When the Proposed Plan was being prepared, no existing mailing list for the Site could be found. Therefore, one was created, partly by a visit to the area. Unfortunately, the mailings to those on what was thought was still Lindenwood Road to the south of Edson Road were returned because the street name was not correct. Some others in the area were also missed. As for the September meeting, the USEPA personnel were told that those wanting the meeting would let people know about it. Nonetheless, USEPA did have a flyer prepared. Unfortunately, it was mailed late and may not have been received prior to the meeting.

USEPA believes that the Proposed Plan was sufficiently clear in describing the areas for OU 1 and OU 2, although specific boundaries were not provided. There is no specific boundary for the western part of OU 1, since its boundary may change as the location of the contamination changes. The wells in the area of the new landfill south of the present unit were not whited-out on the full page map provided. They were not added because they are not sampled for the existing unit. As was stated numerous times at the meetings, USEPA is not the party that has permitted the new landfill unit.

It is not a "no action" remedy for OU 1. The presently selected remedy for the groundwater part of OU 1 is not a no-action remedy. Much of the remedy in the 1991 ROD is still in place, and that is an action remedy. It has never been decided that the landfill needs to be closed. A remedy that is selected must be both cost-effective and protective. It is USEPA's opinion that monitored natural attenuation with the contingency is both.

The fish kill is discussed in previous USEPA responses. The pumping of groundwater at the new landfill site is not the pumping of leachate. Groundwater and leachate are two separate things. The "cyanide waste" from the Parson's Casket site was discussed at the September meeting, which the commenter attended; this is a non-hazardous special waste which the landfill is allowed to accept.

If the commenter believes the monitoring wells are improperly constructed, he should provide specifics to USEPA. Wells are constructed to monitor various elevations of the aquifers, so it is understandable that some wells might be too shallow to detect the presence of contaminants. Sampling by those who have agreed to carry out remedial investigations and remedial designs and actions is the normal way that USEPA operates. USEPA also oversees the monitoring. At this site, the State is also following the monitoring because it is a permitted landfill.

USEPA has chosen the institutional controls alternative for OU 2 and monitored natural attenuation for the change for OU 1, and this decision is discussed in the accompanying ROD. Closure of the landfill was not proposed and is still determined to be unnecessary.

7. Comment. From John Holmstrom III, Winnebago Reclamation Service, Inc. Regarding OU 2, he states that the Phase I and Phase IA Investigation Reports for the Southeast Corner Operable Unit included the conclusions: 1) the highly fractured zones provide a pathway for migration of contamination from the Acme Solvent site to the southeast corner; and 2) some of the volatile organic compounds (VOCs) in the southeast corner probably came from the Acme Solvent site.

He then comments that no action is appropriate for the southeast corner since the Acme Solvent groundwater extraction system is designed to prevent further contamination there. If that does not happen, then the Acme Solvent ROD needs to be modified to further address the groundwater contamination in the southeast corner. He says that the 1999 VOC data, which shows that none of the VOCs mentioned in Table 1 of the Proposed Plan were detected in the southeast corner wells, shows that the no action alternative is proper. He says that the 1999 data shows that four of the five primary contributors to the risk identified in the 1991 risk assessment were not detected or detected in only one well in the southeast corner (the exception is zinc) and this supports the selection of no action. He also points out that no significant health risk was identified in 1991 for the present use scenario, and since the property around the southeast corner is either the present landfill or the new one being built, there will be no future use of the groundwater here.

Regarding OU 1, he presents an argument that chloride and ammonia concentrations can only be an indication of groundwater that may be impacted by the landfill, that there are other sources of these substances in the groundwater, one being the flooding of Killbuck Creek, at which time it recharges the aquifer. He argues that there is no data to support the conclusion that monitored natural attenuation will take longer to restore the groundwater to beneficial use downgradient of the landfill than the barrier well system. He also believes that natural processes have contained the contaminants in the groundwater along the

western boundary of the landfill for the past 8 years and that there are low gradients in this area, and this supports the selection of monitored natural attenuation. He points out that in the most recent sampling, of the five substances identified as substances of concern for the groundwater in the 1991 risk assessment, only zinc and arsenic were detected in any of the wells along the west of the landfill, and these substances are often detected in groundwater. He also states that arsenic and zinc were found during an investigation for the Acme Solvent site, at levels comparable to those found at the Pagel's Pit site, yet these were not considered as elements of risk at the Acme Solvent site. Finally he says that monitored natural attenuation was selected as the groundwater for the Southeast Rockford Groundwater Contamination site although no source control or source removal remedy had been specified and the contaminant levels are much higher than at the Pagel's Pit site, where source control measures have been implemented or will be implemented; this supports the selection of monitored natural attenuation at the Pagel's Pit site.

USEPA Response. Regarding OU 2, the comments are noted. However, if the groundwater in the southeast corner does not return to beneficial use in the future, it would not automatically indicate that the Acme Solvent groundwater extraction system was not performing satisfactorily. There is apparently contamination in the groundwater in the southeast corner from the Pagel's Pit site. Groundwater levels show that there may be flow in the direction of the southeast corner from the landfill, probably from mounding. It is expected that this will be removed once the landfill is capped and the leachate level is brought near the bottom of the landfill.

Regarding the change for OU 1, the comments are noted. Chloride and ammonia concentrations, as well as concentrations of other substances will need to be used to evaluate what is occurring in the groundwater. If there are significant sources of chloride and ammonia other than the landfill, it will have to be demonstrated that these exist and what they contribute to the concentrations in the groundwater. Ammonia generated because of biological activity that takes place because of the presence of constituents of the leachate is attributable to the landfill. The ammonia concentrations detected in the creek are much lower than those detected in some of the monitoring wells. Monitored natural attenuation may take somewhat longer to restore the aquifer to beneficial use. The barrier well system would remove contaminants and discharge them in some other manner. The barrier well system, located near the boundary of the zone of attenuation, would stop the migration of contaminants to the groundwater further west right away and allow that groundwater to begin immediately restoring itself; monitored natural attenuation will not do this. How the groundwater will be progressing along the western end of the landfill will be determined in the continued monitoring that will be done; this monitoring probably will re-

quire additional wells west of the present westernmost wells to determine what is happening further west.